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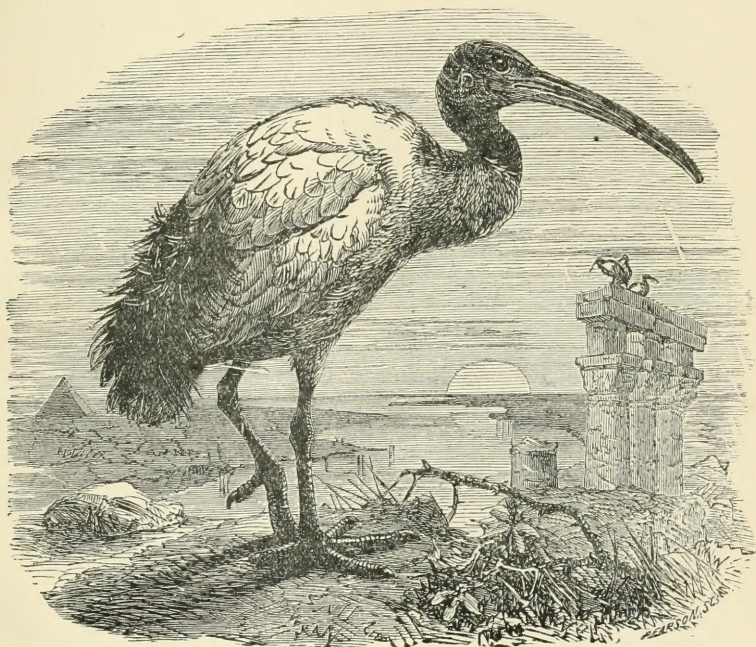
THE IBIS,

A

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EDITED BY

WILLIAM LUTLEY SCLATER, M.A., F.Z.S.



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ELEVENTH SERIES.

He prayeth well, who loveth well
Both man and bird and beast.

PUBLISHED BY THE
BRITISH ORNITHOLOGISTS' UNION

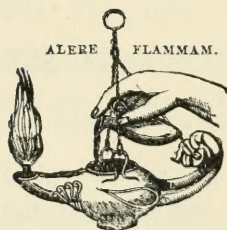
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LIST OF THE MEMBERS OF THE BRITISH ORNITHOLOGISTS' UNION. 1921.

[An asterisk indicates an Original Member. It is particularly requested that Members should give notice to the Secretary of the Union of any error in their addresses or descriptions in this List, in order that it may be corrected.]

Date of
Election.

1916. ADAMS, ERNEST EDWARD ; Lloyd's, Royal Exchange, E.C. 3.
1914. ALDWORTH, Capt. THOMAS PRESTON, D.S.O., 3rd Battn.,
West Kent Regt., Mesopotamia.
1911. ALEXANDER, HORACE GUNDRY ; 78 Gibbins Road, Selby Oak,
Birmingham.
1920. ANDREWS, WILLIAM HENRY MAKENS ; Hethersett, Norwich.
- 5 1888. APLIN, OLIVER VERNON ; Stonehill House, Bloxham, Oxon.
1919. ARCHER, Sir GEOFFREY FRANCES, K.C.M.G. ; Government
House, Berbera, Somaliland.
1896. ARCHIBALD, CHARLES F. ; 2 Darnley Road, West Park,
Leeds, Yorks.
1919. ARNOLD, EDWIN CARLETON ; The College, Eastbourne.
1896. ARRIGONI DEGLI ODDI, Count ETTORE, Professor of Zoology,
University, Padua ; and Ca'oddo, Monselice, Padua, Italy.
- 10 1901. ARUNDEL, Major WALTER B., F.Z.S. ; High Ackworth, Ponte-
fract, Yorks.
1915. ASHEY, EDWIN ; Wittunga, Blackwood, Adelaide, S. Australia.
1901. ASHBY, HERBERT ; Broadway House, Brookvale Road,
Southampton.
1908. ASHWORTH, JOHN WALLWORK, M.R.C.S., L.R.C.P., F.R.G.S.,
F.G.S. ; Thorne Bank, Heaton Moor, near Stockport,
Cheshire.
1918. ASTLEY, ARTHUR ; Freshfield, Ambleside, Westmoreland.

Date of
Election.

- 15 1897. ASTLEY, HUBERT DELAVAL, M.A., F.Z.S. ; Brinsop Court, Hereford.
1919. BACKHOUSE, THOMAS PORTER ; Trinity College, Cambridge ; and 24 Green Street, Cambridge.
1921. BAILEY, Major FREDERICK MARSHMAN, C.I.E. ; 7 Drummond Place, Edinburgh.
- * 1921. BAKER, Captain CYPRIAN THURLOW ; Kaduna, Northern Province, Nigeria.
1892. BAKER, EDWARD CHARLES STUART, J.P., O.B.E., F.Z.S., F.L.S., H.F.A.O.U. ; 6 Harold Road, Upper Norwood, S.E. 19. (*Hon. Secretary and Treasurer.*)
- 20 1901. BAKER, JOHN C., M.B., B.A. ; Ceely House, Aylesbury, Bucks.
1906. BANNERMAN, DAVID ARMITAGE, M.B.E., B.A., F.R.G.S. ; 6 Palace Gardens Terrace, Kensington, W. 8 ; and British Museum (Nat. Hist.), Cromwell Road, S.W. 7.
1890. BARCLAY, FRANCIS HUBERT, F.Z.S. ; The Warren, Cromer, Norfolk.
1885. BARCLAY, HUGH GURNEY, F.Z.S. ; Colney Hall, Norwich, Norfolk.
1903. BARTELS, MAX. ; Pasir Datar, Halte Tjisaat (Preanger), Java, Dutch East Indies.
- 25 1906. BATES, GEORGE L., C.M.Z.S. ; Bitye, *viâ* Ebolowa, Cameroon, West Africa.
1913. BAYNES, GEORGE KENNETH ; 120 Warwick Street, S.W. 1.
1912. BEEBE, WILLIAM, C.M.Z.S. ; Tropical Research Station of the New York Zoological Society, Katabo, Bartica District, British Guiana.
1910. BEESTON, HARRY ; Sunnymead, South Street, Havant, Hants.
1920. BELCHER, CHARLES F. ; Zomba, Nyasaland.
- 30 1897. BENSON, JOHN, P.O. Box 262, Vancouver, B. Columbia.
1897. BERRY, WILLIAM, B.A., LL.B. ; Tayfield, Newport, Fifehire.
1917. BERTRAM-JONES, JOHN WILLIAM ; Kelvedon Hall, Brentwood, Essex.
1921. BEST, Miss MARY G. S. ; 32 Dover Street, W. 1.
1914. BETHAM, Brigadier-General ROBERT M. ; Fiveways, Church Hill, Camberley.
- 35 1907. BETHELL, The Hon. RICHARD, F.Z.S. (Scots Guards) ; 12 Manchester Square, W. 1.
1921. BETTINGTON, JOHN BRINDLEY ; New College, Oxford.

Date of
Election.

1921. BEVEN, JOHN OSMUND, M.A., M.R.C.S., L.R.C.P.; The
Portland Hotel, Great Portland Street, W. 1.
1920. BEVERIDGE, FREDERICK SPENCER; St. Leonards Hill, Dun-
fermline.
1907. BICKERTON, WILLIAM, F.Z.S.; Kingsmuir, 21 Oxhey Road,
Watford, Herts.
- 40 1880. BIDWELL, EDWARD; 1 Trig Lane, Upper Thames Street,
E.C. 4.
1919. BIGGER, Dr. WILLIAM KENNETH, M.C.; P.M.O., Nazareth,
Galilee, Palestine.
1892. BIRD, The Rev. MAURICE C. H., M.A.; Brunstead Rectory,
Stalham, S.O., Norfolk.
1891. BLAAUW, FRANS ERNST, C.M.Z.S.; Gooilust, 's Graveland,
Hilversum, Noord-Holland.
1913. BLACKWOOD, Lt. GEORGE GLENDINNING, M.C. (Seaforth High-
landers); 1 Blackness Crest, Dundee, N.B.
- 45 1903. BLATHWAYT, The Rev. FRANCIS LINLEY, M.A.; Melbury
Rectory, Dorchester, Dorset.
1914. BLYTH, ROBERT OSWALD, M.A.; 35 St. Vincent Place,
Glasgow.
1897. BONAR, The Rev. HORATIUS NINIAN, F.Z.S.; 22 Blackford
Road, Edinburgh.
1905. BONE, HENRY PETERS.
1894. BONHOTE, JOHN LEWIS, M.A., F.L.S., F.Z.S.; Park Hill
House, Carshalton.
- 50 1906. BOORMAN, STAINES; Heath Farm, Send, Woking, Surrey.
1898. BOOTH, GEORGE ALBERT; The Hermitage, Kirkham, Lan-
cashire.
1904. BOOTH, HARRY B., F.Z.S.; Ryhill, Ben Rhydding, *via* Leeds,
Yorks.
1920. BORMAN, Major FRANK WILLIAM; 43 *a* Bow Lane, E.C. 4;
and M.G.C. (1), The Residency, Cairo.
1908. BORRER, CLIFFORD DALISON; 6 Durham Place, Chelsea,
S.W. 3. (*Committee.*)
- 55 1918. BOYD, Capt. ARNOLD WHITWORTH, M.C. (Lancashire Fusiliers);
Frandle House, Northwich.
1915. BRADFORD, ARTHUR DANBY, F.Z.S.; Upton Lodge, Watford,
Herts.
1895. BRADFORD, Sir JOHN ROSE, K.C.M.G., C.B., M.D., D.Sc.,
F.R.S., F.Z.S.; 8 Manchester Square, W. 1.

Date of
Election.

1909. BRIGGS, THOMAS HENRY, M.A., F.E.S.; Sefton, Dawlish,
South Devon.
1902. BRISTOWE, BERTRAM ARTHUR; Ashford Farm, Stoke
D'Abernon, Cobham, Surrey.
- 60 1919. BROCKELBANK, Lt.-Col. RICHARD HUGH ROYDS, D.S.O.,
9th Lancers; Watergate House, Bulford, Wilts.
1908. BROOK, EDWARD JONAS, F.Z.S.; Hoddam Castle, Ecclefechan,
Dumfriesshire.
1920. BROOKS, Major ALLAN, D.S.O.; Okanagan Landing, British
Columbia.
1912. BROWN, THOMAS EDWARD; c/o Messrs. G. Beyts & Co., 11 Port
Tewfik, Suez, Egypt.
1900. BRUCE, WILLIAM SPEIRS, J.L.D., F.R.S.E.; Scottish Oceano-
graphical Laboratory, Surgeon's Hall, Edinburgh.
- 65 1911. BUCHANAN, Captain EDWARD MACKENZIE MURRAY; Leny,
Callandar.
1907. BUCKLEY, CHARLES MARS; 4 Hans Crescent, S.W. 1.
1906. BUCKNILL, Sir JOHN ALEXANDER STRACHEY, K.C., M.A.,
F.Z.S.; Supreme Court, Patna, India; and Athenæum
Club, Pall Mall, S.W. 1.
1908. BUNYARD, PERCY FREDERICK, F.Z.S.; 57 Kidderminster Road,
Croydon, Surrey.
1907. BUTLER, ARTHUR GARDINER, Ph.D., F.L.S., F.Z.S.; 124 Beck-
enham Road, Beckenham, Kent.
- 70 1899. BUTLER, ARTHUR LENNOX, F.Z.S.; St. Leonard's Park,
Horsham, Sussex.
1905. BUXTON, ANTHONY; Knighton, Buckhurst Hill, Essex.
1912. BUXTON, Dr. PATRICK ALFRED; Department of Health,
Government House, Jerusalem.
1896. CAMERON, Major JAMES S. (2nd Bn. Royal Sussex Regt.);
Low Wood, Bethersden, Ashford, Kent.
1888. CAMERON, JOHN DUNCAN; Low Wood, Bethersden, Ashford,
Kent.
- 75 1909. CARROLL, CLEMENT JOSEPH; Rocklow, Fethard, Co. Tipperary,
Ireland.
1904. CARRUTHERS, ALEXANDER DOUGLAS; Barmer Hall, King's
Lynn, Norfolk.
1908. CARTER, THOMAS; Wensleydale, Mulgrave Rd., Sutton, Surrey.
1890. CAVE, Capt. CHARLES JOHN PHILIP, M.A., F.Z.S.; Ditcham
Park, Petersfield, Hants.

Date of
Election.

1919. CHANCE, EDGAR P.; 9 Hay Hill, Berkeley Square, W. 1.
- 80 1919. CHARTERIS, The Hon. GUY LAWRENCE; 26 Catherine Street,
Buckingham Palace Road, S.W. 1.
1882. CHASE, ROBERT WILLIAM; Herne's Nest, Bewdley,
Worcestershire.
1921. CHASEN, FREDERICK NUTTEN; Raffles Museum, Singapore.
1908. CHEESMAN, Major ROBERT E.; c/o The High Commissioner,
Baghdad, Mesopotamia.
1910. CHUBB, CHARLES, F.Z.S.; British Museum (Natural
History), Cromwell Road, S.W. 7.
- 85 1918. CHUBB, Capt. PATRICK ARTHUR; c/o London Joint City &
Midland Bank, 8 New Coventry Street, W. 1.
1912. CLARK, GEORGE WINGFIELD, M.A., F.Z.S.; "Homeland,"
Lode, Cambridge.
1904. CLARKE, Major GOLAND VAN HOLT, D.S.O., F.Z.S.; Chilworth
Court, Romsey, Hants.
1916. CLARKE, JOHN PHILIP STEPHENSON; Borde Hill, Cuckfield,
Sussex.
1889. CLARKE, Col. STEPHENSON ROBERT, C.B., F.Z.S.; Borde Hill,
Cuckfield, Sussex.
- 90 1880. CLARKE, WILLIAM EAGLE, I.S.O., LL.D., F.L.S., F.R.S.E.;
53 North Castle Street, Edinburgh.
1904. COCHRANE, Capt. HENRY LAKE, R.N.; The Chase, Whaddon,
Bletchley, Bucks.
1898. COCKS, ALFRED HENEAGE, M.A., F.Z.S.; Poynetts, Skirmett,
near Henley-on-Thames, Oxon.
1895. COLES, RICHARD EDWARD; Rosebank, New Milton, S.O.,
Hants.
1911. COLLETT, ANTHONY KEELING; 5 Stone Buildings, Lincoln's
Inn, W.C. 2.
- 95 1904. COLLIER, CHARLES, F.Z.S.; Bridge House, Culmstock,
Devon; and Windham Club, St. James' Square, S.W. 1.
1919. COLLINGE, Dr. WALTER EDWARD, D.Sc., M.Sc., F.L.S.
F.E.S.; The Museum, York.
1916. COLTART, Dr. HENRY NEVILLE; "Makum." Alexander Road,
Epsom, Surrey.
1909. CONGREVE, Capt. WILLIAM MAITLAND, M.C.; The Forest,
Kerry, Montgomeryshire.
1913. COOK, JAMES PEMBERTON; Kiora, Kyambu, British East
Africa.

- Date of
Election.
- 100 1914. COURTOIS, The Rev. R. L., S.J.; Director of the Sikawei Museum, near Shanghai, China.
1913. COWAN, FRANCIS; Wester Lea, Murrayfield, Midlothian.
1920. COWARD, THOMAS ALFRED, F.Z.S., F.E.S.; Brentwood, Bowdon, Cheshire.
1894. CREWE, Sir VAUNCEY HARPUR, Bt.; Calke Abbey, Derby.
1917. CUNNINGHAM, JOSIAS, R.N.V.R.; Fernhill, Belfast.
- 105 1916. CURRIE, ALGERNON JAMES; Chief Audit Officer, S.P.R., Shiraz, *viâ* Bushire, S. Persia.
1915. CURRIE, ROBERT ALEXANDER (Chinese Customs); The Custom House, Hankow, China.
1899. CURTIS, FREDERICK, F.R.C.S.; Alton House, Redhill, Surrey.
1896. DANFORD, Lt.-Col. BERTRAM W. Y., R.E.; c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.
1883. DAVIDSON, JAMES, F.Z.S.; 32 Drumsheugh Gardens, Edinburgh.
- 110 1921. DAVIES, Capt. RICHARD REES; Carreg-yr-Idalen, Meuui Bridge, Anglesey.
1905. DAVIS, K. J. ACTON, M.C., F.R.C.S., F.Z.S.; 24 Upper Berkeley Street, W. 1.
1921. DEANE, ROBERT HEWARD; "Bariken," 23 Grange Road, Ealing, W. 5.
1920. DELACOUR, JEAN; Chateau de Cleres, Seine Inférieure, France.
1909. DELMÉ-RADCLIFFE, Capt. ALFRED (105th Maratha Light Infantry); c/o Messrs. Cox & Co., Bombay, India.
- 115 1920. DELMÉ-RADCLIFFE, Lt.-Col. HENRY; c/o Cox & Co., 16 Charing Cross, S.W. 1.
1921. DEMPSTER, GEORGE EDWARD WILLIAM; 224 Tufnell Park Road, N. 19.
1902. DENT, CHARLES HENRY; Snow Hall, Darlington, Durham.
1916. DESPOTT, GIUSEPPE, Curator of the Natural History Museum, The University, Malta.
1921. DEWHURST, Capt. FREDERICK WYNFORD; "Elmwood," North-end Road, Hampstead, N. 3.
- 120 1893. DE WINTON, WILLIAM EDWARD, F.Z.S.; 19 Ennismore Gardens, S.W. 7.
1896. DOBBIE, JAMES BELL, F.R.S.E., F.Z.S.; 12 South Inverleith Terrace, Edinburgh.

Date of
Election.

1889. DOBIE, WILLIAM HENRY, M.R.C.S.; 2 Hunter Street, Chester.
1920. DONALD, CHARLES HILLIARD; Director of Fisheries, Dharmasala, Punjab, India.
1904. DRAKE-BROCKMAN, Lt.-Col. RALPH EVELYN, D.S.O., M.R.C.S., L.R.C.P., F.Z.S.; "Eldama," Salvington, Worthing.
- 125 1890. DRUMMOND-HAY, Col. JAMES A. G. R.- (Coldstream Guards); Seggieden, by Perth.
1878. DURNFORD, W. ARTHUR, J.P.; Elsecar, Barnsley, Yorks.
1903. EARLE, EDWARD VAVASOUR; "Riverside," South Darenth, Kent.
1914. EDWARDS, LAURENCE ALBERT CURTIS, M.A.; 61 Elphinstone Road, Hastings.
1895. ELLIOT, EDMUND A. S., M.R.C.S.; Woodville, Kingsbridge, South Devon.
- 130 1884. ELLIOTT, ALGERNON, C.I.E.; 41 Stanley Gardens, Hampstead, N.W. 3.
1866. ELWES, HENRY JOHN, F.R.S., F.Z.S.; Colesborne, Cheltenham, Gloucestershire. (*President.*)
1920. EVANS, Lt.-Commander ARTHUR, R.N.; H.M.S. 'Vimeria,' c/o G.P.O., London.
1879. EVANS, ARTHUR HUMBLE, M.A., F.Z.S.; 9 Harvey Road, Cambridge.
1888. EVANS, WILLIAM, F.R.S.E.; 38 Morningside Park, Edinburgh.
- 135 1916. EZRA, ALFRED, F.Z.S.; Foxwarren Park, Cobham, Surrey.
1892. FAIRBRIDGE, WILLIAM GEORGE; 141 Long Market Street, Capetown, South Africa.
1916. FALKINER, Capt. JOHN McINTIRE, I.M.S., F.R.C.S.; 22 St. Stephen's Green, Dublin.
1909. FANSHAWE, Capt. RICHARD D. (late Scots Guards); The Cottage, Brimpton, Berks.
1921. FARQUHAR, ARTHUR McNEILL; 55 Hans Road, S.W. 3.
- 140 1894. FARQUHAR, Admiral Sir ARTHUR MURRAY, K.C.B., C.V.O.; Acheron, Aboyne, N.B.
1898. FARQUHAR, Rear-Admiral STUART ST. J., R.N.; Naval & Military Club, Piccadilly, W. 1.
1921. FEASEY, GILBERT GEORGE; 3 Oakdale Road, Streatham, S.W. 16; and Abinsi, *via* Lokoja, Northern Nigeria.
1921. FIELD, FRANK JAMES RICHARD; Gonda, Oudh, India.

Date of
Election.

1921. FINCH, Lieut. HAROLD BINGLEY, M.C.; "Arundel," Prospect Road, Shanklin, Isle of Wight.
- 145 1901. FINLINSON, HORACE W., F.Z.S.; 5 Rosamond Road, Bedford.
1921. FISHER, KENNETH; The Briary, Eton College, Windsor.
1885. FITZHERBERT-BROCKHOLES, WILLIAM JOSEPH; Claughton Hall, Garstang, Lancashire.
1902. FLOWER, Major STANLEY SMYTH, F.Z.S.; Kedah House, Zoological Gardens, Giza, Egypt.
1912. FLOYD, JAMES FRANCIS MURRAY, B.A.; The University, Glasgow.
- 150 1912. FOSTER, ARTHUR H., M.R.C.S., L.R.C.P.; Sussex House, 88 Tilehouse Street, Hitchin, Herts.
1903. FOSTER, NEVIN HARKNESS, F.L.S., M.R.I.A.; Hillsborough, Co. Down, Ireland.
1880. FOSTER, WILLIAM; 39 Colville Gardens, Bayswater, W. 11.
1921. FRANCIS, RICHARD TAUNTON, F.Z.S.; "Fairhaven," Peak's Hill, Purley, Surrey.
1881. FREKE, PERCY EVANS; South Point, Limes Road, Folkestone.
- 155 1895. FROHAWK, FREDERICK WILLIAM, F.E.S.; Uplands, Thundersley, Essex.
1909. FROST, WILLIAM EDWARD, J.P.; Ardvreck, Crieff, Perthshire.
1881. GADOW, HANS, Ph.D., F.R.S., F.Z.S.; Cleramendi, Great Shelford, near Cambridge.
1886. GAINSBOROUGH, CHARLES WILLIAM FRANCIS, Earl of; Exton Park, Oakham, Rutland.
1907. GANDOLFI, ALFONSO OTHO GANDOLFI-HORNOLD, Duke, Ph.D.; Blackmore Park, Hanley Swan, Worcestershire.
- 160 1921. GIBB, DAVID ERIC WILSON; Bridgehouse, Gerrard's Cross, Bucks.
1902. GIBBINS, WILLIAM BEVINGTON, F.Z.S.; Ettington, Stratford-on-Avon, Warwickshire.
1921. GILBERT, Capt. HUMPHREY ADAM; New University Club, St. James's Street, S.W. 1.
1921. GILL, EDWIN LEONARD, M.Sc., Curator of the Hancock Museum, Barras Bridge, Newcastle-on-Tyne.
1919. GILLON, Mrs. NINA; 14 Carlton Terrace, Edinburgh.
- 165 1903. GLADSTONE, Capt. HUGH STEUART, M.A., F.Z.S., F.R.S.E., F.S.A.Scot.; Capenoch, Thornhill, Dumfriesshire; and 40 Lennox Gardens, S.W. 1. (*Committee.*)

Date of
Election.

1921. GLEGG, WILLIAM EDWIN ; The House, Albion Brewery,
Whitechapel Road, E. 1.
1921. GODMAN, Miss EVA M. ; South Lodge, Horsham.
1908. GODMAN, Lt.-Col. EDWARD SHIRLEY (2nd Dorset Regiment) ;
Hampsteel, Cowfold, Sussex.
- *1858. GODMAN, PERCY SANDEN, B.A., C.M.Z.S. ; Hampsteel,
Cowfold, Sussex. (*Gold Medallist.*)
- 170 1906. GOODALL, JEREMIAH MATTHEWS ; The Nest, Bembridge, Isle of
Wight.
1900. GOODFELLOW, WALTER, F.Z.S. ; The Poplars, Kettering,
Northants.
1920. GORDON, Mrs. AUDREY ; Otterburn Tower, Otterburn,
Northumberland.
1921. GORDON, JOHN G. M. ; Corsemalzic, Whauphill, Wigtown-
shire, N.B.
1906. GORDON, SETON PAUL, F.Z.S. ; Auchintoul, Aboyne,
Aberdeenshire.
- 175 1912. GOSSE, Major PHILIP, M.R.C.S., L.R.C.P., R.A.M.C. ; Savile
Club, Piccadilly, W. 1 ; and 25 Argyle Road, Kensington,
W. 8.
1899. GOULD, FRANCIS HERBERT CARRUTHERS, F.Z.S. ; Matham
Manor House, East Molesey, Surrey.
1895. GRABHAM, OXLEY, M.A. ; The Museum, York.
1920. GRAHAM, Major CLAUDE ; Northampton Regt., Army and
Navy Club, Pall Mall, S.W. 1 ; and Talodi, Nuba Mts.
Province, Sudan.
1909. GRANT, Capt. CLAUDE HENRY BAXTER, F.Z.S. ; c/o The Chief
Secretary to the Government, Dar-es-Salaam, Tanganyika
Territory ; and Sports Club, St. James's Square, S.W. 1.
- 180 1918. GRANT, FRANCIS ; 22 Bushmead Avenue, Bedford.
1913. GREENING, LINNEUS, F.L.S., F.Z.S. ; Fairlight, Grappenhall,
near Warrington, Cheshire.
1909. GREY OF FALLODEN, The Rt. Hon. EDWARD, The Viscount,
K.G., P.C., F.Z.S. ; Falloden, Christon Bank, R.S.O.,
Northumberland.
1906. GRIFFITH, ARTHUR FOSTER ; 59 Montpellier Road, Brighton,
Sussex.
1920. GRISCOM, LUDLOW, 37 Fifth Avenue, New York, U.S.A.
- 185 1885. GUILLEMARD, FRANCIS HENRY HILL, M.A., M.D., F.Z.S. ; Old
Mill House, Trumpington, Cambridge.

Date of
Election.

1908. GURNEY, GERARD HUDSON, F.Z.S., F.E.S.; Keswick Hall, Norwich, Norfolk.
1870. GURNEY, JOHN HENRY, F.Z.S.; Keswick Hall, Norwich; and Athenæum Club, Pall Mall, S.W. 1.
1896. GURNEY, ROBERT, F.Z.S.; Ingham Old Hall, Stalham, Norfolk.
1891. HAIGH, GEORGE HENRY CATON, F.Z.S.; Grainsby Hall, Great Grimsby, Lincolnshire.
- 190 1887. HAINES, JOHN PLEYDELL WILTON; 17 King Street, Gloucester.
1898. HALE, The Rev. JAMES RASHLEIGH, M.A.; Boxley Vicarage, Maidstone, Kent.
1913. HARDY, Rear Admiral ERNEST CLIFFORD, R.N.; Wolwich House, Wymyngswold, nr. Canterbury, Kent.
1900. HARPER, EDMUND WILLIAM, F.Z.S.; 6 Ashburnham Road, Bedford.
1900. HARRIS, HENRY EDWARD; "Sunnycote," 53 Christchurch Road, Bournemouth.
- 195 1921. HARRISON, Dr. JAMES M., D.Sc., M.R.C.S., L.R.C.P.; St. Anne's, 1 Tubs Hill, Sevenoaks.
1893. HARTERT, ERNST J. O., Ph.D., F.Z.S.; The Zoological Museum, Tring, Herts.
1921. HARVEY, ROBERT ELLIOTT; 46 Lewin Road, Streatham, S.W. 16.
1900. HASLUCK, PERCY PEDLEY HARFORD; The Wilderness, Southgate, N. 14.
1898. HAWKER, RICHARD MACDONNELL, F.Z.S.; Bath Club, Dover Street, W. 1; and c/o Messrs. Dalgety & Co., 96 Bishopsgate, E.C. 2.
- 200 1918. HERBERT, Capt. EDWARD GREVILLE, R.A.F.; c/o Messrs. Cox & Co., R.A.F. Branch, 111 St. Martin's Lane, W.C. 2; and Bangkok, Siam.
1902. HETT, GEOFFREY SECCOMBE, M.B., F.Z.S.; 8 Wimpole Street, W. 1.
1913. HEWITT, JOHN, M.A.; Director of the Albany Museum, Grahamstown, South Africa.
1900. HILLS, Lt.-Col. JOHN WALLER; 98 Mount Street, W. 1.
1884. HOLDSWORTH, CHARLES JAMES, J.P.; Fernhill, Alderley Edge, Cheshire.

Date of
Election.

- 205 1920. HOLLAND, EARDLEY, F.R.C.S. ; 55 Queen Anne Street, Cavendish Square, W. 1.
1905. HOPKINSON, EMILIUS, M.B., D.S.O., F.Z.S. ; 45 Sussex Square, Brighton, Sussex ; and Bathurst, Gambia, West Africa.
1916. HOPWOOD, CYRIL (Indian Forests) ; c/o Messrs. Thos. Cook & Son, Rangoon, Burma.
1888. HORSEFIELD, HERBERT KNIGHT ; Crescent Hill, Filey, Yorks.
1895. HOWARD, HENRY ELIOT, F.Z.S. ; Clarelands, near Stourport, Worcestershire.
- 210 1881. HOWARD, ROBERT JAMES ; Shearbank, Blackburn, Lancashire.
1911. HUDSON, REGINALD ; 16 Warwick Road, Stratford-on-Avon.
1920. HUMPHREYS, GEORGE RAYNER ; Ivy Lodge, Drumcondra, Dublin.
1920. HUXHAM, Edgr.-Lt.-Commr. HAROLD HUGH, D.S.O., R.N. ; H.M.S. 'Dartmouth,' South American Station, c/o G.P.O. London ; and "The Firs," Valloy Road, Chandlers Ford, Hants.
1918. INGLIS, CHARLES McFARLANE ; Baghownie Factory, Laheria, Serai P.O. Behar, India.
- 215 1901. INGRAM, Capt. COLLINGWOOD, F.Z.S. ; "The Grange," Benenden, Cranbrook, Kent.
1902. INNES BEY, Dr. WALTER FRANCIS ; 6 Square Halim Pasha, Cairo, Egypt.
1913. IREDALE, Tom ; 39 Northcote Avenue, Ealing, W. 5. (*Committee*).
1888. JACKSON, Sir FREDERICK JOHN, K.C.M.G., C.B., F.L.S., F.Z.S.
1892. JAMES, HENRY ASHWORTH, F.Z.S. ; Hurstmonceux Place, Hailsham, Sussex.
- 220 1920. JANSON, CHARLES WILFRID ; 6 Hyde Park Square, W. 2.
1896. JESSE, WILLIAM, B.A., F.Z.S. ; Meerut College, Meerut, India.
1891. JOHNSTON, Sir HARRY HAMILTON, G.C.M.G., K.C.B., F.Z.S. St. John's Priory, Poling, near Arundel, Sussex.
1920. JONES, ALEXANDER EDWARD ; Tattersall House, Ambala, India.
1909. JONES, Surgeon-Commander KENNETH HURLSTONE, M.B., Ch.B., F.Z.S., R.N. ; H.M.S. 'Fisgurd,' Portsmouth.

Date of
Election.

- 225 1899. JOURDAIN, The Rev. FRANCIS CHARLES ROBERT, M.A.; Appleton Rectory, Abingdon, Berks.
 1902. JOY, NORMAN HUMBERT, M.R.C.S., L.R.C.P.; Theale, Berks.
 1880. KELHAM, Brigadier-General HENRY ROBERT, C.B. (late Highland Light Infantry); Army and Navy Club, Pall Mall S.W. 1.
 1894. KELSALL, Lt.-Col. HARRY JOSEPH, R.A.; c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.
 1897. KELSALL, The Rev. JOHN EDWARD, M.A.; Milton Rectory, New Milton, Hants.
- 230 1904. KELSO, JOHN EDWARD HARRY, M.D.; Braeside, Edgewood, Lower Arrow Lake, British Columbia.
 1914. KENNEDY, Capt. JOHN NOBLE, M.C., R.G.A.; The Manse, Port Patrick, Wigtownshire, Scotland; and United Service Club, S.W. 1.
 1891. KERR, JOHN GRAHAM, F.R.S., F.Z.S., Regius Professor of Zoology; 9 The University, Glasgow.
 1895. KINGSFORD, WILLIAM EDWARD; Cairo, Egypt.
 1902. KINNEAR, NORMAN BOYD, C.M.Z.S.; British Museum (Natural History), Cromwell Road, S.W. 7.
- 235 1910. KLOSS, CECIL BODEN, F.Z.S., F.R.A.I.; Assistant Director of Museums, Kuala Lumpur, Federated Malay States.
 1921. KNIGHT, Capt. CHARLES WILLIAM ROBERT, M.C.; Jessons, Sevenoaks.
 1892. LAIDLAW, THOMAS GEDDES; Bank of Scotland House, Duns, Berwickshire.
 1913. LAMBERT, GODFREY CHARLES; Woodcote, Esher, Surrey.
 1917. LAMPARD-VACHELL, BENJAMIN GARNET; Pembroke College, Cambridge.
- 240 1884. LANGTON, Dr. HERBERT; St. Moritz, 61 Dyke Road, Brighton, Sussex. (*Committee*)
 1881. LASCELLES, The Hon. GERALD WILLIAM, F.Z.S.; Tillington House, Petworth, Sussex.
 1892. LA TOUCHE, JOHN DAVID DIGNES, C.M.Z.S.; c/o Custom House, Mengtze, Yunnan, China.
 1898. LEAROYD, A. ERNEST; 6 Lowndes Street, S.W. 1.
 1910. LEMON, Mrs. MARGARETTA LOUISA, F.Z.S.; Hillcrest, Redhill, Surrey.
- 245 1898. LE SOUEF, DUDLEY, C.M.Z.S.; Director of the Zoological Gardens, Melbourne, Victoria, Australia.

Date of
Election.

1921. LEWIS, STANLEY ; Highfield House, Hillfield, Cheddar,
Somerset.
1921. LEWIS, THOMAS, F.R.S., C.B.E. ; 10 Chesterford Gardens,
Hampstead, N.W. 3.
1897. LILFORD, JOHN, Lord, F.Z.S. ; Lilford Hall, Oundle,
Northants.
1909. LINGS, GEORGE HERBERT ; Richmond Hill, Cheadle, Cheshire.
- 250 1897. LODGE, GEORGE EDWARD, F.Z.S. ; Hawkhouse, Park Road,
Camberley, Surrey.
1908. LONG, SYDNEY HERBERT, M.D., F.Z.S. ; 31 Surrey Street,
Norwich, Norfolk.
1919. LONGSTAFF, Capt. TOM GEORGE, M.A., M.D., F.Z.S. ; Picket
Hill, Ringwood, Hants.
1921. LOW, Dr. GEORGE CARMICHAEL, M.D., M.R.C.P. ; 6 Bentinck
Street, W. 1.
1904. LOWE, PERCY ROYCROFT, B.A., M.B., B.C. ; British Museum
(Nat. Hist.), Cromwell Road, S.W. 7. (*Committee*.)
- 255 1914. LOWE, WILLOUGHBY PRESCOTT ; Gorsemoor, Throwleigh,
Okehampton, Devon ; and c/o Postmaster, Khartoum,
Sudan.
1920. LOYD, Captain LEWIS RICHARD WILLIAM ; The Lookout,
Branscombe, Beer S.O., S. Devon.
1921. LUCAS, NATHANIEL SAMPSON, M.B. ; 19 Westbourne Terrace,
Hyde Park, W. 2.
1920. LUDLOW, FRANK, M.A. ; Club of Western India, Poona,
India ; and Priory Gate, Dunster, Somerset.
1920. LUKE, LEONARD PERCIVAL ; 9 Piggott Street, Brighouse,
Yorks.
- 260 1904. LYNES, Captain HUBERT, C.B., C.M.G., R.N. ; 23 Onslow
Gardens, South Kensington, S.W. 7.
1920. MACKENZIE, Colonel ALEXANDER FRANCIS, C.M.G., M.V.O.
(late Argyle & Sutherland Highlanders) ; Ord House,
Muir of Ord, N.B.
1917. MACKENZIE, JOHN MITCHELL DOUGLAS, B.A., C.M.Z.S., Indian
Forest Service ; c/o Thos. Cook & Son, Rangoon, Burma,
India ; and 6 The Circus, Bath.
1916. MACKWORTH-PRAED, CYRIL W. ; Dalton Hill, Albury, Surrey ;
and 51 Onslow Gardens, S.W. 7.
1906. MACMILLAN, WILLIAM EDWARD FRANK ; 42 Onslow Square,
S.W. 7.

- Date of
Election.
- 265 1920. MADOC, Lieut.-Colonel HENRY WILLIAM; Ashfield, Douglas,
Isle of Man.
1906. MAGRATH, Lt.-Col. HENRY AUGUSTUS FREDERICK, Indian
Army (retired): Junior Constitutional Club, Piccadilly,
W. 1.
1921. MAIDSTONE, Viscount; 23 Manchester Square, W. 1.
1917. MALCOMSON, HERBERT THOMAS; Glenorchy, Knock, Belfast.
1917. MANN, Capt. EDWARD HAMILTON, M.C., R.H.A.; Junior
United Service Club, Charles Street, S.W. 1.
- 270 1907. MANN, THOMAS HUGH, F.Z.S.; Trulls Hatch, Rotherfield,
Sussex.
1904. MANSON-BAHR, Brevet-Major PHILIP HENRY, D.S.O., M.D.,
M.R.C.P., R.A.M.C.; 32 Weymouth Street, W. 1.
1904. MAPLETON-BREE, HARVEY WILLIAM, M.A.; Gable End,
Allesley, Coventry.
1894. MARSHALL, ARCHIBALD McLEAN, F.Z.S.; Great Chitcombe,
Brede, Sussex.
1894. MARSHALL, JAMES McLEAN, F.Z.S.; Bleaton Hallet, Blair-
gowrie, Perthshire.
- 275 1898. MASSEY, HERBERT; Ivy Lea, Burnage, Didsbury, Manchester.
1921. MATHEWS, ALLISTER WILLIAM; Foulis Court, Fair Oaks,
Hants.
1907. MATHEWS, GREGORY MACALISTER, F.L.S., F.R.S.E., F.Z.S.;
Foulis Court, Fair Oak, Hants.
1915. MAY, WILLIAM NORMAN, M.D.: The White House, Sonning,
Berks.
1921. McCONNELL, ARTHUR FREDERICK; Camfield Place, Hatfield,
Herts.
- 280 1921. McNEILE, JOHN HENRY; 11 Embankment Gardens, S.W. 3.
1883. MEADE-WALDO, EDMUND GUSTAVUS BLOOMFIELD, F.Z.S.;
Hever Warren, Hever, Kent.
1912. MEIKLEJOHN, Lt.-Colonel RONALD FORBES, D.S.O. (1st Bn.
Royal Warwickshire Regiment); 147 Victoria Street,
S.W. 1.
1899. MEINERTZHAGEN, Colonel RICHARD, D.S.O., F.Z.S. (Royal
Fusiliers); 63 Bedford Gardens, Kensington, W. 8.
1886. MILLAIS, JOHN GUILLE, F.Z.S.; Compton's Brow, Horsham,
Sussex.
- 285 1916. MILLARD, WALTER SAMUEL, F.Z.S.; 22 Boyne Park, Tun-
bridge Wells.

Date of
Election.

1903. MILLS, Canon HENRY HOLROYD, M.A., F.Z.S. ; The Rectory,
St. Stephen-in-Brannel, Grampound Road, Cornwall.
1879. MITCHELL, FREDERICK SHAW ; Hornshaws, Millstream,
B.C., Canada.
1901. MITCHELL, P. CHALMERS, M.A., D.Sc., LL.D., F.R.S., F.L.S.,
F.Z.S. ; Secretary to the Zoological Society of London,
Regent's Park, N.W. 8.
1919. MONTAGU, The Right Hon. EDWIN SAMUEL ; 24 Queen
Anne's Gate, S.W. 1.
- 290 1920. MOON, Dr. HAROLD JOSEPH, M.R.C.S., L.R.C.P. ; 65 South
Drive, St. Anne's-on-the-Sea, Lancashire.
1914. MOULTON, Major JOHN CONEY, M.A., B.Sc., F.L.S., F.R.G.S.,
F.E.S. ; Fort Canning, Singapore ; The Hall, Bradford-
on-Avon, Wilts.
- 1886. MUIRHEAD, GEORGE, F.R.S.E. ; Speybank, Fochabers,
Morayshire.
1893. MULLENS, Major WILLIAM HERBERT, M.A., LL.M., F.Z.S. ;
Westfield Place, Battle, Sussex.
1892. MUNN, Capt. PHILIP WINCHESTER, F.Z.S. ; Puerto Alcudia,
Majorca, Balearic Isles, Spain.
- 295 1918. MUNT, HARRY RAYMOND ; 10 Ashburn Place, South Kensing-
ton, S.W. 7.
1897. MUNT, HENRY, F.Z.S. ; 10 Ashburn Place, South Kensington,
S.W. 7.
1910. MURRAY, Capt. HERBERT WILLAUME, F.Z.S. ; The Old House,
Epsom, Surrey.
1920. MUSSELWHITE, DONALD WOODWARD ; 7 Jessica Road, Wands-
worth Common, S.W. 18.
1907. NEAVE, SHEFFIELD AIREY, M.A., D.Sc., F.Z.S., F.E.S. ;
Bishop's House, Beaconsfield.
- 300 1895. NESHAM, ROBERT, F.Z.S., F.E.S. ; Utrecht House, Poynder's
Road, Clapham Park, S.W. 4.
1920. NEVILL, Captain THOMAS NEVILL CARLTON ; Bramall Hall,
Cheshire.
1929. NEWMAN, JOHN ; Oare House, Oare, Brendon, North
Devon.
1904. NEWMAN, THOMAS HENRY, F.Z.S. ; Verulam, Forty Lane,
Wembley Park, Middlesex.
1917. NICHOLL, ARCHIBALD M. C. ; Royal Naval College, Osborne,
Isle of Wight.

- Date of
Election.
- 305 1902. NICHOLS, JOHN BRUCE, F.Z.S.; Parliament Mansions, Victoria Street, S.W. 1.
1900. NICHOLS, WALTER BUCHANAN; Stour Lodge, Bradfield, Manningtree, Essex.
1876. NICHOLSON, FRANCIS, F.Z.S.; Ravenscroft, Windermere, Westmoreland.
1902. NICOLL, MICHAEL JOHN, F.Z.S.; Valhalla House, Zoological Gardens, Giza, Egypt.
1921. O'CONNELL, JOHN HENRY, L.R.C.P. & S.I.; 38 Heathfield Road, Liverpool.
- 310 1920. O'DONEL, HARRY VICTOR; Hasimara T.E., Hasimara P.O., E.B. Railway, Duars, India.
1907. OLDHAM, CHARLES, F.Z.S.; The Bollin, Shrublands Road, Berkhamsted, Herts.
1906. OSMASTON, BERTRAM BERESFORD (Imperial Forest Service); Pachmarhi, C.P., India.
1913. OWEN, JOHN HUGH; Old School House, Felsted, Essex.
1921. OWEN, OWEN RODENHURST; Bank House, Knighton, Radnorshire.
- 315 1919. PAGE, WESLEY THEODORE, F.Z.S.; Langstone, Lingfield, Surrey.
1921. PAGET-WILKES, ARTHUR HAMILTON; 16 Holywell, Oxford, and Lincoln College, Oxon.
1883. PARKER, HENRY, C.E.; 26 St. George's Road, St. Anne's-on-the-Sea, Lancs.
1880. PARKIN, THOMAS, M.A., F.L.S., F.Z.S.; Fairseat, High Wickham, Hastings, Sussex.
1908. PATON, EDWARD RICHMOND, F.Z.S.; Hareshawmuir, By Kilmarnock, Ayrshire, Scotland.
- 320 1921. PATTEN, CHARLES JOSEPH, M.A., M.D., Sc.D.; University, and 18 Broomhall Road, Sheffield.
1911. PATTERSON, WILLIAM HARRY; 25 Queen's Gate Gardens, S.W. 7.
1904. PEARSE, THEED; Courtenay, British Columbia.
1894. PEARSON, CHARLES EDWARD, F.L.S.; Hillcrest, Lowdham, Notts.
1902. PEASE, SIR ALFRED EDWARD, Bt., F.Z.S.; Pinchinthorpe House, Guisborough, Yorkshire; and Brooks's Club, St. James's Street, S.W. 1.

Date of
Election.

- 325 1891. PENROSE, FRANCIS GEORGE, M.D., F.Z.S.; Rathkeale,
51 Surrey Road, Bournemouth.
1900. PERCIVAL, ARTHUR BLAYNEY, F.Z.S.; Game Ranger, Nairobi,
British East Africa: Sports Club, St. James' Square, S.W. 1.
1912. PERSHOUSE, Major STANLEY; c/o Messrs. Cox & Co., 16 Charing
Cross, S.W. 1.
1886. PHILLIPS, ETHELBERT LORT, F.Z.S.; 79 Cadogan Square,
S.W. 1.
1920. PHILLIPS, MONTAGUE AUSTIN, F.L.S., F.Z.S.; Devonshire
House, Reigate, Surrey.
- 330 1920. PHILLIPS, Captain WILLIAM WATT ADDISON; Anasigalla,
Matugama, Ceylon; and Bowden Lodge, Russell Terrace,
Leamington.
1914. PITMAN, Capt. CHARLES ROBERT SENHOUSE (27th Punjabis);
P.O. Box 39, Nakuru, Kenya Colony, East Africa.
1908. PLAYER, W. J. PERCY; Wernfado, Clydach R.S.O., Glamor-
ganshire.
1907. POCKOCK, REGINALD INNES, F.R.S., F.L.S., F.Z.S.; Superintendent
of the Zoological Gardens, Regent's Park, N.W. 8.
1917. POLIAKOV, GREGORY T. (Editor 'Messenger Ornithologique');
Moskva-Nijninogorod Railway, Station Obiralovka,
Savvino, Russia.
- 335 1896. POPHAM, HUGH LEYBORNE, M.A.; Houndstreet House, Pens-
ford, Somerset.
1920. PRATT, HERBERT; 62 Lyford Road, Wandsworth Common,
S.W. 18.
1898. PRICE, ATHELSTAN ELDER, F.Z.S.; Salisbury Hall, St. Albans.
1903. RALFE, PILCHER GEORGE; The Parade, Castletown, Isle
of Man.
1903. RATCLIFF, FREDERICK ROWLINSON; 29 Connaught Square, W.2.
- 340 1917. RATTRAY, Col. RULLION HARE (retired); 68 Dry Hill Park
Road, Tonbridge.
1917. RAW, WILLIAM; 170 Newbridge Street, Newcastle-on-Tyne.
1894. READ, RICHARD HENRY, M.R.C.S., L.R.C.P.; Church Street,
Hanley, Staffordshire.
1888. READ, ROBERT H.; 8a South Parade, Bedford Park, W. 4.
1917. REEVE, Capt. JOHN SHERARD, F.Z.S.; Leadenham House,
near Lincoln.
- 345 1903. RENAUT, WILLIAM E.; Royal Academy of Music, York Gate,
Marylebone Road, N.W. 1.

Date of
Election.

1908. RICHARDSON, NORMAN FREDERIC, F.R.G.S. ; " Lynton,"
Brigstock Road, Thornton Heath, Surrey.
1907. RICHMOND, HERBERT WILLIAM, M.A., F.R.S. ; King's College,
Cambridge.
1895. RICKETT, CHARLES BOUGHEY, F.Z.S. ; 27 Kendrick Road,
Reading, Berks.
1920. RINGROSE, BERNARD JOHN ; Wilford Rise, Bromeswell Heath,
Woodbridge, Suffolk.
- 350 1896. RIPPON, Lt.-Col. GEORGE, F.Z.S. ; The Clump, Buckland,
Lymington, Hants ; and United Service Club, Pall Mall,
S.W. 1.
1907. RITCHIE, Captain ARCHIBALD THOMAS AYRES ; c/o British
East African Corps, Mombassa, B.E. Africa ; and 16
Wilton Street, S.W. 1.
1902. RIVIÈRE, BERNARD BERYL, F.R.C.S. ; St. Giles's Plain,
Norwich, Norfolk.
1898. ROBINSON, HERBERT C., C.M.Z.S. ; Selangor State Museum,
Kuala Lumpur, Federated Malay States.
1912. ROBINSON, HERBERT WILLIAM, F.Z.S.Scot. ; Patchetts, Caton,
near Lancaster.
- 355 1917. ROBINSON, SYDNEY MADDOCK ; c/o Col. J. H. Evans, Fraser
Road, Rangoon, Burma.
1919. ROBINSON, THEODORE RICHARD ; Brunswick Lodge, Dunton
Green, Kent.
1896. ROGERS, Lt.-Col. JOHN MIDDLETON, D.S.O., F.Z.S. (late
1st Dragoons) ; Riverhill, Sevenoaks, Kent.
1913. ROGERS, REGINALD NANKIVELL ; Carwinion, near Falmouth,
Cornwall.
1893. ROTHSCHILD, LIONEL WALTER, Lord, D.Sc., Ph.D., F.R.S.,
F.Z.S. ; Zoological Museum, Tring, Herts.
- 360 1894. ROTHSCHILD, The Hon. NATHANIEL CHARLES, M.A., F.Z.S. ;
Arundel House, Kensington Palace Gardens, W. 8.
1918. ROWAN, WILLIAM, The Dept. of Biology, University of
Alberta, Edmonton, Alta, Canada.
1910. RUSSELL, HAROLD, F.Z.S. ; 16 Beaufort Gardens, Chelsea,
S.W. 3.
1883. ST. QUINTIN, WILLIAM HERBERT, F.Z.S. ; Scampston Hall,
Rillington, Yorkshire.
1903. SANDEMAN, Lt.-Col. ROBERT PRESTON (R. Gloucester Hussars) ;
Dan-y Parc, Crickhowell, S. Wales.

Date of
Election.

- 365 1889. SAPSWORTH, ARNOLD DUER, F.Z.S.; 30 Sussex Place, Regent's Park, N.W. 1.
1914. SAUER, Dr. HANS, F.Z.S.; Bath Club, Dover Street, W. 1; and Pinners Hall, Austin Friars, E.C. 2.
1909. SAVAGE, The Rev. ERNEST URMSON; Raughton Head Vicarage, Dalston, R.S.O., Cumberland.
1921. SCHAANNING, HANS THOMAS LANGE; Konservator, Stavanger Museum, Norway.
1891. SCLATER, WILLIAM LUTLEY, M.A., F.Z.S. 10 Sloane Court, Chelsea, S.W. 1. (*Editor.*)
- 370 1908. SEPPINGS, Lt.-Col. JOHN WILLIAM HAMILTON, A.P.D.; The Castle, Cape Town, South Africa.
1899. SERLE, The Rev. WILLIAM, M.A., B.D.; The Manse, Duddingston, Edinburgh.
1901. SETH-SMITH, DAVID, F.Z.S.; 34 Elsworthy Road, South Hampstead, N.W. 3.
1904. SETH-SMITH, LESLIE MOFFAT, B.A., F.Z.S.; Tangley, Caterham Valley, Surrey; and Kampala, Uganda.
1909. SETON, Sir MALCOLM COTTER CARISTON, K.C.B.; 13 Clarendon Road, Holland Park, W. 11; and Union Club, Trafalgar Square, S.W. 1.
- 375 1917. SHIPTON, WILLIAM, B.A., M.D.; 2 The Square, Buxton, Derbyshire.
1921. SHORTRIDGE, GUY CHESTERTON, M.B.E.; The Kaffrarian Museum, King Williamstown, Cape Colony.
1921. SIBOUR, The Vicomte LOUIS DE, F.Z.S., F.L.S., F.R.M.S.; Albert Villa, Shanklin, I. of Wight.
1920. SKEA, ERNEST MARCELLUS; Chief Assayer of Gold Mining States, Ltd., P.O. Box, 46 Pilgrims Rest, Transvaal.
1918. SLADEN, Major ALEXANDER GEORGE LAMBART; Kingswood House, The Lee, Bucks; and Junior Carlton Club, S.W. 1. (*Committee.*)
- 380 1908. SMALLEY, FREDERIC WILLIAM, F.Z.S.; Windermere, 4 Blackheath Park, S.E. 3.
1918. SMEED, Major CECIL WILLIAM, R.F.A.; Miland, Westbourne, West Sussex.
1920. SMITH, DESMOND ABEL; Longhills, near Lincoln.
1914. SMITH, Major JOHN LINDSAY (Indian Army); Supply & Transport Corps, Commdt. Camel Corps, Multan, Punjab, India.

Date of
Election.

1918. SMITH, THOMAS ; Whiston Eaves, Froghall, Stoke-on-Trent.
- 385 1906. SNOUCKAERT VAN SCHAUBURG, Baron RENÉ CHARLES ; Doorn, Holland.
1921. SOWERBY, ARTHUR DE CARLE ; c/o H. K. Lewis & Co., Ltd., 136 Gower Street, W.C. 1.
1903. SPARROW, Colonel RICHARD, C.M.G., D.S.O., F.Z.S., F.R.G.S. (late 7th Dragoon Guards); Rookwoods, Sible Hedingham, Essex.
1906. STANFORD, Surgeon-Commndr. CHARLES EDWARD CORTIS, B.Sc., M.B., R.N. ; 94 Jermyn Street, S.W. 1.
1910. STANFORD, EDWARD FRASER ; 12 A Maddox Street, Regent Street, W. 1.
- 390 1913. STANFORD, Major HENRY MORRANT, M.C., R.F.A., 115 Battery, B.E.F., France ; c/o Messrs. Edward Stanford, Ltd., 12-14 Long Acre, W.C. 2.
1913. STANFORD, Capt. JOHN KEITH, M.C. ; c/o Messrs. Edward Stanford, Ltd., 12-14 Long Acre, W.C. 2.
1915. STAPLES-BROWNE, Capt. RICHARD CHARLES, B.A., F.Z.S. (New Zealand Med. Corps); Brashfield House, Bicester, Oxon.
1900. STARES, JOHN WILLIAM CHESTER ; Portchester, Hants.
1921. STENDALL, JESSE AUSTIN SYDNEY ; 12 Rossmore Avenue, Ballynafeigh, Belfast.
- 395 1902. STENHOUSE, Surgeon-Capt. JOHN HUTTON, M.B., R.N. ; Caledonian United Service Club, Edinburgh.
1910. STEVENS, HERBERT ; Gopaldhara, Mirik P.O., Kurseong, Darjiling Himalayan Rly., India.
1906. STEWARD, EDWARD SIMMONS, F.R.C.S. ; 30 Victoria Avenue, Harrogate, Yorks.
1914. STEWART, JOHN ; Mainshill, Beith, Ayrshire.
1921. STOCKS, ANDREW DENYS ; 8 Old Square, Lincoln's Inn, W.C. 2 ; and Union Club.
- 400 1917. STONEHAM, Capt. HUGH FREDERIC, O.B.E., F.E.S., 1st Battn. East Surrey Regt. & Asst. Chief Signal Officer, Northern Command ; "Stoneleigh," Reigate, Surrey ; and Army & Navy Club, Pall Mall, S.W. 1.
1921. STONEY, CECIL VESEY, J.P., D.L. ; Oakfield Park, Raphoe Co. Donegal.
1881. STUDDY, Col. ROBERT WRIGHT (late Manchester Regiment); Westbury, Paignton, Devon.

Date of
Election.

1887. STYAN, FREDERICK WILLIAM, F.Z.S.; Stone Street, near Sevenoaks, Kent.
1914. SUTHERLAND, LEWIS ROBERTSON, M.B., C.M., Medical School, Dundee, N.B.; Wellgate House, West Newport, Fifeshire.
- 405 1905. SWANN, HAROLD, F.Z.S.; The Lordship, Standon, Herts.
1920. SWANN, HARRY KIRKE, F.Z.S.; Thorncombe, Lyonsdown Road, New Barnet, Herts.
1882. SWINHOE, Col. CHARLES, M.A., F.L.S., F.Z.S.; 4 Gunterstone Road, West Kensington, W. 14.
1884. TAIT, WILLIAM CHASTER, F.Z.S.; Entre Quintas 155, Oporto, Portugal.
1911. TALBOT-PONSONBY, CHARLES GEORGE; 5 Crown Office Row, Temple, E.C. 4.
- 410 1911. TATTON, REGINALD ARTHUR; Cuerden Hall, Bamber Bridge, Preston, Lancs.
1914. TAVISTOCK, HASTINGS WILLIAM SACKVILLE, Marquis of, F.Z.S.; Warblington House, Havant.
1905. TAYLOR, LIONEL EDWARD, F.Z.S.; Bankhead, Kelowna, British Columbia.
1886. TERRY, Major HORACE A. (late Oxfordshire Light Infantry); Compton Grange, Compton, Guildford, Surrey.
1921. THOMAS, Mrs. ROSE HAIG; 13 Arlington Street, S.W. 1.
- 415 1916. THOMASSET, BERNARD CHARLES, F.Z.S.; The Manor House, Ashmansworth, near Newbury, Berks.
1904. THOMPSON, Major WILLIAM R., R.G.A.; R.A. Mess, Sierra Leone.
1911. THOMSON, A. LANDBOROUGH, O.B.E., D.Sc., F.Z.S.; 9 Addison Gardens, Kensington, W. 14.
1900. THORBURN, ARCHIBALD, F.Z.S.; Hascombe, Godalming, Surrey.
1920. THORNHILL, Lt.-Colonel CUDBERT JOHN MASSY, C.M.G., D.S.O., Indian Army, Bath Club, Dover Street, W. 1.
- 420 1893. THORPE, DIXON L.; Loshville, Etterby Scaur, Carlisle, Cumberland.
1903. TICEHURST, CLAUD BUCHANAN, M.A., M.D., M.R.C.S.; 121 London Road North, Lowestoft.
1894. TICEHURST, NORMAN FREDERIC, M.A., M.B., F.R.C.S., F.Z.S.; 24 Pevensey Road, St. Leonards-on-Sea, Sussex.

Date of
Election.

1902. TOWNSEND, REGINALD GILLIAT, M.A.; Critchells, Lokerley, Romsey, Hants.
1893. TREVOR-BATTYE, AUBYN, M.A., F.L.S., F.Z.S.; Ashford Chace, Petersfield, Hants; and Royal Societies Club, St. James's Street, S.W. 1.
- 425 1913. TUCKWELL, EDWARD HENRY, F.Z.S.; Berthope, Compton, near Guildford, Surrey.
1921. TUTT, JOHN FRANCIS DONALD, M.R.C.V.S., F.L.S., F.E.S., F.R.M.S., F.Z.S.; 1 St. Cross Road, Winchester, Hants.
1911. TYRWHITT-DRAKE, HUGH GARRARD, F.Z.S.; Cobtree, Sandling, Maidstone, Kent.
1918. VAIZEY, GEORGE DE HORNE; 53 The Pryors, Hampstead, N.W. 3.
1918. VAIZEY, KER GEORGE RUSSELL; 26 Cornwall Gardens, S.W. 7.
- 430 1910. VAN SOMEREN, DR. ROBERT ABRAHAM LOGAN; Jinja, Uganda, British East Africa.
1912. VAN SOMEREN, DR. VICTOR GURNET LOGAN; c/o Medical Dept., P.O. Box 140, Nairobi, B.E. Africa.
1913. LT.-COL. VENNING, FRANCIS ESMOND WINGATE; The Croft, Yateley, Hants.
1881. VERNER, COL. WILLIAM WILLOUGHBY COLE (late Rifle Brigade); Hartford Bridge, Winchfield, Hants; and United Service Club, S.W. 1.
1886. WADE-DALTON, COL. H. D.; Hauxwell Hall, Finghall R.S.O., Yorkshire.
- 435 1916. WAIT, WALTER ERNEST, Deputy Collector of Customs, Colombo, Ceylon.
1918. WALKER, ALEXANDER HOPE, M.D., L.R.C.P., M.R.C.S.; The Common, Cranleigh, Surrey.
1914. WALL-ROW, JOHN; 51 Courtfield Gardens, S.W. 5.
1895. WALLIS, HENRY MARRIAGE; Ashton Lodge, Christchurch Road, Reading, Berks.
1920. WARD, Major EDWARD HUGH; R.M.A.; H.M. Wireless Station, Horsea Island, Portchester, Hants.
- 440 1903. WATT, HUGH BOYD, F.Z.S.; 12 Great James Street, Bedford Row, W.C. 1.
1920. WAYDELIN, FREDERICK JOHN; Haverhill, Whitchurch, Hants.

Date of
Election.

1920. WEBBER, Captain WILLIAM BEARE INCLEDON ; Buckland House, Branton, N. Devon.
1912. WELLS, CHARLES HENRY ; Broomfield, 80 Brookhouse Hill, Fulwood, Sheffield.
1921. WELLS, THOMAS ; Natural History Museum, South Kensington, S.W. 7.
- 445 1912. WENNER, MAX VICTOR ; Lake House, Sutton, near Macclesfield, Cheshire.
1913. WHISTLER, HUGH, F.Z.S. (Indian Police) ; Caldbee House, Battle, Sussex ; and c/o Messrs. King, King & Co., Bombay, India.
1918. WHITAKER, Capt. JOHN ALBERT CHARLES (Coldstream Guards) ; Babworth Hall, Retford, Notts.
1891. WHITAKER, JOSEPH I. S., F.Z.S. ; Malfitano, Palermo, Sicily.
1909. WHITE, HENRY LUKE ; Belltrees, Seone, New South Wales, Australia.
- 450 1903. WHITE, STEPHEN JOSEPH, F.Z.S.
1912. WHYMPER, SAMUEL LEIGH ; Oxford Mansions, Oxford Street, W. 1 ; and Oriental Club, Hanover Square, W. 1.
1914. WICKHAM, PERCY FREDERIC ; c/o Messrs. Thos. Cook & Son, Rangoon, Burma.
1915. WILD, OLIVER HILTON ; Ariel Lodge, Cheltenham, Gloucestershire.
1894. WILKINSON, JOHNSON ; Vermont, Huddersfield, Yorkshire.
- 455 1912. WILKINSON, WILLIAM ARTHUR, F.L.S., F.Z.S. ; Lindum House, Anchorage Road, Sutton Coldfield, nr. Birmingham.
1916. WILLIAMSON, WALTER JAMES FRANKLIN, C.M.G., F.Z.S. (Financial Adviser to the Government of Siam) ; Bangkok, Siam.
1920. WILSON, Commander ALEC THOMAS LEE, J.P., R.N. ; Garth House, Garth, Brecknockshire.
1897. WILSON, ALLAN READ, B.A., M.D., B.Ch. (Oxon.) ; Eagle House, Blandford, Dorset.
1888. WILSON, CHARLES JOSEPH, F.Z.S. ; 14 Suffolk Street, Pall Mall, S.W. 1.
- 460 1897. WITHERBY, HARRY FORBES, M.B.E., F.Z.S. ; 12 Chesterford Gardens, Hampstead, N.W. 3.
1908. WITHERINGTON, GWYNNE ; 19 Sumner Place, South Kensington, S.W. 7.

Date of
Election.

1899. WOLLASTON, ALEXANDER FREDERICK RICHMOND, B.A.; 20
Moore Street, S.W. 3.
1912. WOOD, MARTIN STANLEY, M.D., R.A.M.C.; Cheadle Royal,
Cheadle, Cheshire.
1917. WOODFORD, Capt. CHARLES EDWARD MONTGOMERIE (1st Battn.
Sherwood Foresters); 8 Dry Hill Park Road, Tonbridge,
Kent.
- 465 1912. WOODHOUSE, CECIL, M.D.; Coaxdon Hall, Axminster, South
Devon.
1921. WORDIE, Major WILLIAM, O.B.E., M.A.; 52 Montgomerie
Drive, Glasgow.
1902. WORKMAN, WILLIAM HUGHES, F.Z.S.; Lismore, Windsor,
Belfast, Ireland.
1908. WYNNE, RICHARD OWEN; Foulis Court, Fair Oak, Hants.
- 469 1916. ZAMBRA, Rag. Cav. VITTORIO; Corso Umberto, I. 49, Rome,
Italy.

Extra-Ordinary Member.

1899. GODWIN-AUSTEN, Lt.-Col. HENRY HAVERSHAM, F.R.S., F.Z.S.;
Nore, Hascombe, Godalming, Surrey.

Honorary Members.

1907. ALLEN, JOEL ASAPH, Ph.D., F.M.Z.S.; American Museum of
Natural History, Central Park, New York, U.S.A.
1917. CHAPMAN, FRANK MICHLER; American Museum of Natural
History, Central Park, New York, U.S.A.
1919. MENEGAUX, HENRI AUGUST; Muséum d'Histoire Naturelle,
Paris.
1905. OBERHOLSER, HARRY CHURCH; United States National
Museum, Washington, D.C., U.S.A.
- 5 1915. RICHMOND, CHARLES WALLACE; United States National
Museum, Washington, D.C., U.S.A.
1903. RIDGWAY, ROBERT, C.M.Z.S.; Smithsonian Institution, Wash-
ington, D.C., U.S.A.
1890. SALVADORI, Count TOMMASO, M.D., F.M.Z.S.; Royal Zoological
Museum, Turin, Italy.
1919. STEJNEGER, LEONHARD, C.M.Z.S.; Smithsonian Institution,
Washington, D.C., U.S.A.
1921. VAN OORT, Dr. EDUARD DANIEL; Museum of Natural History,
Leyden, Holland.

Date of
Election.*Honorary Lady Members.*

1910. BATE, Miss DOROTHEA M. A. ; Bassendean House, Gordon,
Berwickshire.
1911. BAXTER, Miss EVELYN VIDA ; The Grove, Kirkton of Largo,
Fifeshire.
1910. BEDFORD, MARY, DUCHESS OF, F.Z.S. ; Woburn Abbey, Beds.
1916. HAVILAND, Miss MAUD D. ; Old Hall, Newnham College,
Cambridge.
- 5 1915. MEINERTZHAGEN, Mrs. ANNIE C. ; Swordale, Evanton, Ross-
shire.
1911. RINTOUL, Miss LEONORA JEFFREY ; Lahill, Largo, Fifeshire.
1915. SNETHLAGE, Dr. EMILIE ; Goeldi Museum, Pará, Brazil.
1910. TURNER, Miss EMMA LOUISA, F.Z.S. ; Langton Close, Girton,
Cambridge.

Colonial Members.

1904. CAMPBELL, ARCHIBALD JAMES ; Bulgaroo, Broughton Road,
Surrey Hills, Victoria, Australia.
1908. FARQUHAR, JOHN HENRY JOSEPH, B.Sc., N.D.A. ; Assistant
Conservator of Forests, Calabar, Southern Nigeria,
West Africa.
1910. FLEMING, JAMES H., C.M.Z.S. ; 267 Rusholme Road, Toronto,
Canada.
1909. HAAGNER, ALWIN KARL, F.Z.S. ; Director of the Zoological
Gardens, Box 754, Pretoria, South Africa.
- 5 1908. HALL, ROBERT, F.L.S., C.M.Z.S. ; c/o Tasmanian Museum,
Hobart, Tasmania.
1914. LEACH, JOHN ALBERT, M.A., D.Sc. ; c/o Education Depart-
ment, Melbourne, Australia.
1905. MACOUN, JOHN, M.A., F.R.S.C. ; Naturalist to the Geological
Survey of Canada, Ottawa, Canada.
1907. SWYNNERTON, CHARLES FRANCIS MASSY, F.L.S. ; Poste Res-
tante, Dar-es-Salaam, Tanganyika Territory.
1919. TAVERNER, PERCY A. ; Victoria Memorial Museum, Ottawa,
Canada.
- 10 1912. WHITE, Capt. SAMUEL ALBERT ; Wetunga, Fulham, South
Australia.

Date of
Election.*Foreign Members.*

1919. BANGS, OUTRAM; Museum of Comparative Zoölogy, Cambridge, Mass., U.S.A.
1880. BUREAU, Dr. LOUIS; École de Médecine, Nantes, France.
1906. BÜTTIKOFER, Dr. JOHANNES, C.M.Z.S.; Director of the Zoological Garden, Rotterdam, Holland.
1906. BUTURLIN, SERGIUS A.; Alotyri, Gouv. Simbirsk, East Russia.
- 5 1921. CORY, CHARLES BARNEY; Field Museum of Natural History, Chicago.
1919. DABBENE, Dr. ROBERTO; Museo Nacional, Buenos Aires, Argentina.
1919. GRINNELL, Dr. JOSEPH; Museum of Vertebrate Zoology, Berkeley, California, U.S.A.
1919. GYLDENSTOLPE, Count NILS; Royal Zoological Museum, Stockholm, Sweden.
1902. IHERING, Dr. HERMAN VON, C.M.Z.S.; Director, State Museum of Catarina, Florianopolis, Brazil.
- 10 1918. KURODA, NAGAMACHI; Fukuyoshi Cho, Akasaka, Tokyo, Japan.
1914. LÖNNBERG, Prof. Dr. A. J. EINAR, F.M.Z.S.; Director of the Zoological Museum, Stockholm, Sweden.
1921. MCGREGOR, RICHARD C.; Bureau of Science, Manila, Philippine Islands.
1894. MENZBIER, Prof. Dr. MICHAEL, C.M.Z.S.; Moscow, Russia.
1921. REISER, Dr. OTMAR; Ober Pickern, b. Marburg, A.D. Yugoslavia.
- 15 1914. STONE, Dr. WITMER; Academy of Natural Sciences, Philadelphia, Pa., U.S.A.
1902. SUSHKIN, Dr. PETER, C.M.Z.S.; Petrograd, Russia.
- 1896 WINGE, HERLUF, C.M.Z.S.; University Zoological Museum, Copenhagen, Denmark.

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THE IBIS.

ELEVENTH SERIES.

VOL. III. No. 1. JANUARY 1921.

I.—*On a recently described Woodpecker* (*Picus rubicollaris*)
from Siam. By E. C. STUART BAKER, M.B.O.U.

(Plate I.)

AMONG the numerous new species and subspecies of birds recently found by Messrs. Herbert, Gairdner, Williamson, and others in Siam, there are few more handsome or conspicuous than the subject of the frontispiece of this number of 'The Ibis,' obtained by Mr. E. G. Herbert's collectors.

Descriptions of both male and female of this fine Woodpecker were given by me in the Bulletin of the B. O. C. vol. xli. p. 10 (October 1920), where it was named *Picus rubicollaris*, and are here reprinted.

Adult male. Whole crown brilliant crimson-scarlet changing to pure scarlet on the nape, the feathers of the crown with black bases which show through in places; sides of the head

dull olive-green ; a line of red running from above the gape to the neck and a tiny line of reddish above the lores ; chin and throat greenish-white ; back to end of tail-coverts bright, but dark, yellowish-green ; tail black, greenish at the base and with broken white bars on the central rectrices ; lesser and median wing-coverts and inner secondaries like the back, but with a bronze sheen and inner webs blackish ; greater coverts, primaries, and outer secondaries blackish-brown barred with white ; upper breast dull crimson-red, forming with the scarlet nape a complete red collar, the two colours blending on the sides of the neck ; lower breast dark green, abdomen, flanks, and under tail-coverts lighter, more yellowish-green with white and pale yellowish markings.

“Eyes reddish-brown ; bill black ; legs and claws yellow” (*Herbert*).

Wing 136 mm., bill from front 36 mm., tarsus 30 mm.

The female is like the male, but has the crown dark green ; the collar is less strongly developed on the upper breast, but is equally intense scarlet on the nape.

“Eyes reddish-brown ; bill black ; legs green, claws brown” (*Herbert*).

Wing 139 mm., bill from front 34·5 mm., tarsus 29·5 mm.

Types. ♂, no. 262, Ban Hoi Mak, Camp no. 39, Siam, 29. ii. 20 ; ♀, Muong Lep, Camp no. 15, Siam, 16. i. 20.

Mr. Herbert is now unfortunately absent in America, and I am therefore unable to add any field-notes to the description. The plate shows well the more conspicuous features, especially the wholly scarlet crown of the male, the equally brilliant nape of the female, and the strongly marked collar on the breast of both. The green of both sexes is also noticeably darker, yet brighter, than it is in the other species of the same genus.

II.—*Notes on the Birds of North-East Chihli, in North China.* Part III.* By J. D. D. LA TOUCHE, C.M.Z.S., M.B.O.U.

182. *Columba livia intermedia* (Strickl.).

Columba intermedia D. & O. p. 384.

I shot a Pigeon out of a flock of *C. rupestris* on 21 May, 1911. It was without any white on the tail or rump, and was probably an Indian Blue Rock-Pigeon.

183. *Columba rupestris* Pall.

Columba rupestris D. & O. p. 385.

The Bar-tailed Rock-Pigeon is a common resident in the mountains near Chinwangtao, and probably all over north-east Chihli.

This Pigeon was common in the mountains of the Liautung Peninsula in February, 1890.

184. *Turtur risorius* (L.).

Turtur risorius D. & O. p. 387.

The Indian Ring-Dove is a very common resident a few miles inland of the port, frequenting the large trees round about the country houses and villages and the willow, poplar, and pine groves on the plains. A winged bird obtained in the spring of 1911 soon became very tame, and after keeping it for seven years, I gave it to a friend in Shanghai with my other birds.

185. *Turtur orientalis* Lath.

Turtur rupicola D. & O. p. 385.

Turtur orientalis La T. p. 578.

The Eastern Turtle-Dove is a very common migrant in north-east Chihli and appears to nest in this district. It passes Chinwangtao from the end of March to well on into June and throughout September until at least the 15th of October and probably later.

* For Parts I. and II. *vide* Ibis, 1920, pp. 629-671, and pp. 880-920.

Two young birds were brought to me from the mountains on the 16th of July, 1917. They were still in the first nestling plumage and were unable to feed by themselves. The head, neck, wing-coverts, and mantle were of a rich deep brown, the feathers of the wing-coverts and mantle being edged with chestnut; the back was slate coloured and the breast chestnut-brown. The bill was of a very dark brownish horn. They retained this plumage until about September, when they changed gradually into adult plumage. They were fed without difficulty by hand with crushed kaoliang and small millet moistened with warm water, and remained very tame until they could feed by themselves, after which they would not allow one to handle them so freely. One of these birds developed an abnormal liking for raw beef, and I had to hide carefully the minced beef prepared for the other birds, as this dove would pounce on it and devour it all up. Sometimes, if it saw me distributing this food, it would fly down to snatch it from my hands. It would pursue the Cuckoo to get his meat from him. The other young dove was almost equally fond of bread and milk, and both birds would eagerly devour this when I gave them any. The meat appeared to disagree with the dove, and I prevented it from eating this as much as possible. On my leaving Chinwangtao I gave them liberty and had at first some difficulty in getting them to go out. The native who sold me these birds told me that one of the villagers had one which he had reared at liberty and which remained perfectly tame.

The Eastern Turtle-Dove is very common in southern Manchuria and breeds at Newchwang.

186. *Syrrhaptes paradoxus* (Pall.).

Syrrhaptes paradoxus D. & O. p. 389.

Pallas's Sand-Grouse is of very irregular occurrence at Chinwangtao. In the very cold year of 1905, I believe, it was seen in great numbers, but since then it does not appear to have occurred until the autumn of 1912. That year, on the 10th of November, I met several flocks flying very swiftly towards the northeast. They flew low as a rule,

twittering continuously. Some packs kept wheeling round, but none settled that day. During that month a great number appeared to have passed, some from west to east, others in an opposite direction. They probably came from the interior via the Chihli Plain. Many flocks must have settled on the plain in this vicinity and farther north, as the market during the winter was stocked with both live and dead birds. The former were kept in baskets like chickens or quail and seemed quite tame. They were fed on kaoliang (sorghum). I saw birds flying also during December, but all passed at a considerable distance, and I had to fall back on the market for specimens. The immigration must have ceased early in the winter as no fresh specimens were to be seen in the market after December or maybe January, and the birds must have returned inland during the latter month. After this, I did not see any more, neither were any exposed for sale in the Chinwangtao market. I was much astonished to hear from Mr. A. L. Hall, to whom I am indebted for much information and for specimens from the extreme north of the province, that this Sand-Grouse is unknown in the Chihfeng district. Mr. C. B. Rickett wrote to me in the spring of 1913 that great numbers of Sand-Grouse were imported that season into England from Russia, so that 1912-13 must have been a great Sand-Grouse year.

Pallas's Sand-Grouse is also of irregular occurrence at Newchwang and is occasionally very abundant there. During the winter 1889-90 I saw but one flock and none were brought to market.

187. *Phasianus colchicus karpowi* Buturlin.

Phasianus torquatus, var. *a*, D. & O. p. 409.

The North China Ring-necked Pheasant is very abundant in the mountainous country north of Chinwangtao, but does not occur commonly within twelve miles of the port. From the beginning of November to the beginning of March the market is stocked with these pheasants brought down from localities twenty to sixty miles distant from the coast.

The characteristic features of the North China Pheasant

are said to be a wide and complete white collar and dark flanks, to which Père David adds a white spot, often present, below the ear. The examination of, I may say, hundreds of these pheasants, during seven winters at Chinwangtao, has convinced me that, whereas the more or less broad white collar is a constant feature, the depth of colouring of the flanks, as also the development of the eyebrow, the green of the lower back and rump, and the ear-spot are variable features. The last-mentioned character may be put aside as of no distinctive value; some birds have it, others not. A few birds obtained in the market have the white on the neck so extended that the base of all the green feathers from the ring to the ear is white. The width of the ring is also extremely variable and the hinder part of it is often very narrow, the feathers being edged with black or green. Some birds procured in the market have the flanks and the base of the hind neck of a very rich and dark orange colour, and these have also generally the ridge of the back and rump of a deep olive colour with a bright emerald sheen. Very occasionally one comes across a specimen which is no darker than Lower Yangtse birds. Again, the edging of the copper-red breast-feathers is variable and cannot be taken into consideration; some birds have this edging broad and complete, others have but a mere apical speck. On the other hand, the scapulars show very little variation, such as is not uncommon in Lower Yangtse birds.

Several examples, shot at twenty to twenty-five miles north of the port, may be specially mentioned. These have all dark flanks and the green on the back and rump is brilliant; but one bird (not purchased), which was evidently a bird of the year, had very little green on the back. The eyebrow is very white and broad in three examples, dull or of medium development in six others. The ear-spot is present in five and absent in four. The width of the white ring varies: in front from about 2 in. to 1 in.; on the sides from $1\frac{1}{4}$ in. to 2 in.; behind, from about half an inch to 0.20 in.

In comparing the north-east Chihli Pheasant with the Lower Yangtse Pheasant, there is only one constant feature

by which the two birds may be always distinguished from one another, and that is the colouring of the sides of the neck above the white ring. In *P. torquatus* this is violet, except just next to the ring; in the north-east Chihli bird it is green.

The Pheasant of north-east Chihli may therefore be characterized as follows:—

1. Eyebrow more or less broad.
2. Sides of the neck above the white ring shot with green.
3. White ring, *generally* broad and *always complete*.
4. Flanks and base of hind neck more or less deep orange.
5. Ridge of back and rump olive with a more or less brilliant emerald-green sheen.

Of the above characters, only Nos. 2 and 3 are *absolutely* constant.

Among the series of Ring-necked Pheasants procured here, three may be specially mentioned. One, apparently hermaphrodite, purchased in the market on the 23rd of January, 1916; and a female, also obtained in the local market, which has the black markings of the upper parts replaced by a delicate lavender-grey. The former bird has the general colouring of the male *P. karpowi*, the coppery-red upper breast-feathers are not edged with black, having only a black apical speck, the webs on either side of this have a straw-coloured spot at their extremity. The flank-spots are very small, the white collar has just below it on the hind neck a broad edge of coppery chestnut and is edged with straw-colour in front. The wing-coverts are marked with chestnut. The colouring of the back resembles neither that of the male nor that of the female: the feathers are black in the centre with a brownish-buff spot towards the base, the shaft of the same light colouring, the rest of the feathers is chestnut waved with black and with a broad border of dull olive-grey. The rump feathers are dark brown, barred with brownish buff and with a metallic green apical fringe. The upper tail-coverts are buffish grey with broad oval-shaped bars encircled with chestnut. The tail (central rectrices missing) is of the usual golden olive with

violet fringes and has rather narrow bars. The bird weighed only $1\frac{3}{4}$ lb., but was in good condition. Dissection showed one testis and what looks like a diseased ovary. The parts have been preserved in spirit. Culmen 0.90 in., wing 8.60 in., tarsus 2.85 in. There are no spurs.

The third bird, which was sent to me by my collector after I had left Chinwangtao, is labelled a male, but it is of the size of a female, without spurs. There are traces of female plumage on the head and upper parts and the deep yellow flank-feathers are plain.

188. *Phasianus colchicus pallasi* Rothschild.

An example from Chihfeng in north Chihli, a locality adjoining the Gobi desert and about 190 miles as the crow flies north of Chinwangtao, has pale buffish-red scapulars, the back very blue-grey, the collar moderately broad, a white ear-spot, the central and the next two pairs of rectrices with a small terminal white spot, and the tail much washed with grey. Two other examples from the same place, however, are much the same as Chinwangtao birds except that they have the eyebrow much more developed. A female is much paler than that of *P. karpowi*. The Chihfeng country is probably on the southern limit of *P. c. pallasi*. I am much indebted for these specimens to Mr. A. L. Hall, who kindly sent me some by post and brought down others himself.

189. *Pucrasia xanthospila* Gray.

Pucrasia xanthospila D. & O. p. 407, pl. 104.

The North China Pucras Pheasant is occasionally found in the Shanhaikuan and Chinwangtao markets. I have seen one or two males nearly every winter in the latter market and two females; one of the females was said to have been brought from a locality which is about sixty miles to the north of Chinwangtao. This Pheasant apparently is not found in the near vicinity of Chinwangtao, but only in the wooded country at least thirty miles north of the port.

Reeves's Pheasant (*Syrnaticus reevesii*) occurs in the mountains surrounding the Imperial Tombs (Tung Ling)

and in the north-western parts of the province. Swinhoe's Eared Pheasant (*Crossoptilon manchuricum*) is also supposed to occur in the Tung Ling and appears to be not uncommon in the province of Shansi. Neither of these pheasants is known in the mountains of this district.

190. *Coturnix coturnix* (L.).

Coturnix communis D. & O. p. 346 (part); La T. p. 579.

The Common Quail passes Chinwaungtao in March and April, and is very abundant during October and in the early part of November. Some remain all the winter.

191. *Coturnix coturnix japonica* T. & S.

Coturnix communis D. & O. p. 346 (part).

Coturnix japonica La T. p. 579.

The Japanese Quail is usually very abundant towards the middle of May and some are to be found until the beginning of June. It is again met with in August and September and most probably breeds here. A live male example, brought from Chihfeng in north Chihli by Mr. A. L. Hall in October, had the characteristic red sides of head and throat. This colour disappeared during the winter leaving the bird with a streaked face and throat. Owing probably to unfavourable food conditions, the red colouring was not fully assumed until July following, and on the 14th of June the sides of the head and throat had still a good deal of white. The red of the head and throat was again lost in the autumn: the cheeks and throat became streaked with pale red, a reddish-brown streak and a malar stripe of the same colour remaining.

192. *Caccabis chukar pubescens* Swinhoe.

Caccabis chukar D. & O. p. 395.

The Chukor is common in the mountainous parts of north-eastern Chihli. Four eggs, taken in the Shanhaikuan Mountains on the 4th of May, 1915, were brought to me together with the hen bird. These eggs are highly glossy, buff, speckled with dull pinkish red. One egg is thickly speckled all over and has a slight cap, and large pink-red spots on the

apex. The others are very sparsely marked. They measure 1.52×1.21 , 1.58×1.20 , 1.60×1.22 , and 1.66×1.20 in. The man who brought me these eggs said that sometimes as many as twenty eggs were found in one nest.

193. *Perdix daurica* Pall.

Perdix barbata D. & O. p. 392.

The Mongolian or Bearded Partridge is very common on the hills of north-eastern Chihli. It occurs also in good numbers on the hills, near Chinwangtao, and the market is fairly well supplied with them during the season.

I found this Partridge common in February 1890 in the mountains of the Liautung Peninsula.

194. *Turnix blanfordi* Blyth.

Turnix maculatus D. & O. p. 398.

Turnix blanfordi La T. p. 579.

Blanford's Button Quail is a very common migrant in north-east Chihli. It passes Chinwangtao from about the middle of May to about the 7th of June, and from the last week in August to well on into October. I have no doubt that it breeds here. A live female example given to me by Mr. A. L. Hall in October 1915 constantly uttered a cry which might be syllabled as "krek." During March it began to utter what is presumably the breeding call. The bird began by making a low sound which exactly resembled the deep, but very distant hoot of a steamer's whistle. After this there was a short pause, then another low hoot with the same ventriloquistic effect, but a little louder, after which another pause, and the same sound was uttered again; after the fifth call or so it developed into a weird moan. The calls were repeated at short intervals, the three or four last being heartrending, very humanlike moans; these increased in intensity, and were altogether about eight or nine in number; the bird as it made these sounds bowed its head and slightly depressed its wings. The calling of this bird became very frequent during the first half of May, and on the 14th, noticing that it was calling more than usual, I went to find out what was the matter, and I

found the bird crouching in a corner of the cage as if it wanted to lay or incubate. I thereupon put a quantity of dry grass into the cage, which the Quail took immediate possession of, hollowing out a depression and taking the grass and throwing it over its back so as to form a dome to the nest. Next day the Hemipode appeared to have given up the idea of laying, but on the 16th I discovered hidden among the grass a miniature egg, apparently laid the previous day, as that same day at noon I found a second egg, this one about one-third the usual size, also hidden away among the grass. None was laid on the 17th, but on the 18th I found a third egg, resembling the second one in size. No others were laid, and the calling became less frequent and intense. I was unfortunately unable to procure a male. The Hemipode, on being shown a skin of one of its own species, became greatly excited, puffed out its feathers, bowed and "kreked" as if pleased. On the 31st of the month, I happened to pick up another female, slightly wounded in the wing, which, when healed, I placed in the cage, together with the other *Turnix* and two male *Coturnix japonica*. The *Turnix*, beyond giving the newcomer a gentle peck now and then during the first day, did not attempt to molest it, and the four birds lived in harmony until the 16th of July, when one of the Japanese Quail, a young bird of the previous year, was found killed (by the other male probably). The new *Turnix* showed signs of wanting to lay soon after it had been placed with the others, and on the 21st of June I found three eggs laid by it. On the 22nd, 26th, 27th and 28th, four more eggs were found, presumably laid by the same bird. On the 6th of July I found another. All these were very small eggs, much under half size; but on the 17th, a much larger egg, about half size, was found, and on the 20th and 21st two more miniature eggs. On the 23rd of July I had to take the new *Turnix* out of the cage as it was badly pecked about the head, evidently by the old bird. When the Japanese Quail remained alone with the latter, it made violent love to it and attempted to pair, but without any encouragement from

the Hemipode, which invariably tried to escape from it. The following year only one egg was laid by the new Quail. The other bird had unfortunately been attacked by a rat and was so injured that I had to chloroform it. This bird at the time of its death had assumed an extraordinary melanistic plumage, probably due to insufficient insect-food. I fed these Quail on kaoliang and small millet, and gave them besides bread and milk and insects when in season.

195. *Rallus indicus* Blyth.

Rallus indicus D. & O. p. 489.

I have an adult male of the Indian Rail which was brought down to me alive from Chihfeng in northern Chihli by Mr. A. L. Hall, who had obtained it at the beginning of May. I shot an immature bird in the crops here on the 21st of September and a half-grown bird on the 28th of September, so that this Rail evidently breeds here. The soft parts of the adult male are : iris orange-red, culmen brownish, the edge of the upper mandible and lower mandible orange-vermilion, legs rosy grey.

I shot out of a ditch on the plains near Newchwang in southern Manchuria on the 26th of May, 1889, an example of *Amaurornis paykulli* (Ljungh).

196. *Porzana pusilla* (Pall.).

Porzana pygmaea D. & O. p. 487.

Porzana pusilla La T. p. 579.

Pallas's Crake passes during the latter half of May to the beginning of June, and is met with again in wet fields and marshes from the beginning of August to the last week in October. It is extremely abundant during the autumn passage. It is said by David to summer near Peking, and probably also breeds near Chinwangtao.

I saw this Crake in summer near Newchwang.

197. *Gallinula chloropus parvifrons* Blyth.

Gallinula chloropus D. & O. p. 485.

The Indian Common Moorhen summers in the marshes. I have three eggs taken at the end of June.

198. *Gallicrex cinerea* (Gm.).

Gallicrex cinerea D. & O. p. 484; La T. p. 579.

A single male example was taken by my local collector at Shanhaikuan in April 1913. I believe that I saw one on the 27th of August, 1912. This is probably the northernmost breeding-limit of the Water-Cock.

199. *Fulica atra* L.

Fulica atra D. & O. p. 489; La T. p. 579.

Coots are extremely abundant in the marshes during most years in September and October. They are uncommon in spring.

The Coot is a common migrant at Newchwang.

200. *Grus grus lilfordi* Sharpe.

Grus cinerea D. & O. p. 434.

Grus sp. (part), La T. p. 579.

I have examples of the Eastern Grey Crane, shot in the vicinity of Chinwangtao in December and January. A few of these winter here. Immense flocks of Cranes pass over Chinwangtao in spring during March and early in April, and again in October. These are mainly, I believe, composed of birds of this species. As a rule, they fly so high that it is not easy to identify them except by the call. On the 12th of October, 1915, I counted some 28 flocks passing from 4.30 P.M. to dark—there were from 40 to 70 birds in each flock. At 8 P.M. they were still passing. Thousands must have gone over that day.

201. *Grus leucauchen* Temminck.

Grus vipio D. & O. p. 435.

I have a handsome adult male obtained at Chinwangtao on 10 October, 1918—wing $22\frac{1}{2}$ in., culmen 5.8 in., tarsus 9.5 in. Legs crimson-lake; bill (dried) dull greyish. The under tail-coverts are grey.

202. *Grus japonensis* Müller.

• *Grus viridirostris* D. & O. p. 435.

An adult example of the Manchurian Crane was hawked round in November 1916. It had been shot

near Shanhaikuan. I believe that examples of this Crane are occasionally obtained in the neighbourhood, but during six years' residence at Chinwangtao, I know of two only having been captured. Among the flocks of Crane which pass over I have seen white Cranes with black wings which were either of this or the next species. The following dates may be particularly mentioned : 12 October, 2 November, 1913, 30 March, 1915. The birds seen on this last-mentioned date are noted in my diary as follows:—"At 3.15 p.m. two very large flocks of Cranes flew over accompanied by a couple of small parties: some were white with black primaries so far as I could make out, others were grey birds. All were flying together, a patch of white birds and then a lot of grey ones. The effect of the variegated V's was very curious. There must have been 200 of the birds." These white Cranes have a rather shrill call : "coo-kee."

203. *Grus leucogeranus* Pall.

Grus leucogeranus D. & O. p. 436.

I have an example of the Great White Crane, shot at Hsieh Chia Ying in the spring of 1915. With the exception of the bastard wing and primaries which are black, the bird is entirely white. The colouring of the soft parts in the dried skin are :—bill dull livid purple, apical part pale horn ; skin of crown and face dusky reddish yellow ; legs dull reddish pink. The bill is serrated at its extremity for about 2.20 in. *Measurements* :—Culmen 7.20, wing 24.00, tail 8.20, tarsus 9.50 inches.

204. *Otis dybowskii* Tacz.

Otis tarda D. & O. p. 421.

Otis dybowskii La T. p. 579.

The Eastern Great Bustard passes Chinwangtao from early in March to the end of April or beginning of May. On the 10th of May, 1916, two of these birds flew over the port, but these were doubtless belated travellers. In autumn, from October until about the 10th of November is the time of

passage. These birds probably begin to pass in September or possibly at the end of August, but I have no positive records. As the kaoliang (sorghum) is not down much before the beginning of October—and the birds, as a rule, fly very low,—observations at that season are difficult until the plain is more or less cleared of the high crops. My predecessor at this port once shot eight in the course of an afternoon at the beginning of October, out of a large number which flew over the port that day. These Bustards fly in flocks which occasionally contain from 40 to 50 birds; but, as a rule, 10 to 20 individuals is the usual number. Very wary, they seldom alight while migrating, except in the vicinity of decoys and in very open places. After the middle of November and during winter, the Great Bustard may be found on the bare high ground inland and on the plains. The natives shoot the Eastern Great Bustard on passage, by means of decoys, both in spring and in autumn after the crops have been cut *. Large circular pits are dug on the plain in the line of flight of the Bustards. These are furnished with a flat roof of kaoliang stalks, the roof being a very few inches above the level of the ground. The edge of the roof is hung with grass so as to conceal the interior. A few paces from the pit, Bustard skins stuffed so as to represent the birds in an expectant attitude are planted all round. These Bustard skins have the orbits stuffed with cotton painted black, the legs are cut off and replaced by a stout stick, the tail is spread in the characteristic manner, and the skins, in which the wing-quills have been pulled out, are stuffed in such a way as to show a great deal of white on the flanks, the wings being tightly bound to the body. The professional shooting-men come daily to these decoys during the times of passage and remain there throughout the day. On the approach of the Bustards they conceal themselves in the pits. The Bustards, on sighting the decoy, generally fly straight to it and after wheeling round once

* Since the above was written, I have been informed by my collector that the birds are also taken with nets.

or twice settle in its vicinity—as a rule, within easy range of the men's guns. The guns used are single-barrelled, and as the occupants of the pit are two in number one or two birds remain as the result of a successful shot. These are instantly deprived of the flight- and sometimes even of the tail-feathers, which are made up into bundles for sale to feather merchants, and the mutilated body is sent to market. The Chinwangtao market is stocked with Bustards in spring and autumn, and in winter many birds are brought from inland. The price varies according to size from \$0.50 to \$4.00, the latter price being asked for birds which have perfect wings and tail; otherwise a large mutilated bird may be had for a couple of dollars. Young birds are not bad eating, but old males are very rank in flavour.

The Eastern Great Bustard takes at least three or perhaps four years to develop to its full size and plumage. Young males of the year have the head, neck, and breast of a somewhat darkish grey, the primaries are spotted at their extremity, the side-rectrices are double-barred, and the weight varies from 6 to 10 lbs. In the following spring a short beard is assumed, but no other change takes place beyond the moulting of the primaries and secondaries. In the second spring (third year of the bird) the bird has a clear grey crown with an inconspicuous central dark stripe, a fair-sized beard, the neck and breast remain as in autumn (clear pale grey with a trace of lengthening and disintegrating of the fore-neck feathers). The wing-coverts have some of the immature markings, but the outer rectrices have the single subterminal black bar of the adult plumage. The male evidently assumes in the second autumn the clearer grey head, neck, and breast of the adult bird.

The male when three or more years old has in spring the head, nape, and upper hind-neck of a very pale grey; the dark coronal stripe has almost disappeared: the chin, throat, and upper lower neck are white, tinged with buff on the neck. The beard is four or more inches long, and the feathers of the fore-neck are disintegrated and almost as

long as the beard, and grade into chestnut at the base of the lower fore-neck. The breast has become chestnut by the moulting of the feathers, which are now lanceolate, slightly disintegrated, and of considerable length. The lesser wing-coverts are pure pale grey, spotted with white. The wing measures from $23\frac{1}{2}$ to $24\frac{1}{2}$ inches.

The adult bird in autumn and winter has the throat whitish, the head, fore-neck, and breast of a clear light grey, the feathers of the breast being rounded, with occasionally a few dashes of chestnut. There is a well-developed narrow crest which in spring is almost as light-coloured as the rest of the head.

The female plumage undergoes apparently much the same development as the male with regard to the wing-quills and rectrices. The breast has in spring a slight admixture of tawny chestnut.

The foregoing description of the male in spring plumage is taken from four males shot in spring at Chinwangtao or Shanhaikuan :—one adult in full breeding dress, one adult moulting into the full breeding dress, a male in its third year, and a young male of the previous year. Besides these, I have seen another adult spring male and, on the 4th of February, 1912, in the market, an adult male with disintegrated neck-feathers and a quantity of fulvous on the sides of the lower neck, so that probably the breeding plumage is assumed very early in the year.

Adult males generally weigh from 15 to 19 lbs. and over. I have been told by foreign sportsmen that they had seen birds of 30 lbs. in weight, but these are not commonly met with. Females weigh from 7 to probably 9 lbs.

I may mention here that the Chinese shooting-men in north-eastern Chihli have three separate popular names for the Bustard. Adult males are called *Yang Pu* (Sheep Bustard), younger males are called *Ch'ing Pu* (Dark Bustard), and very small males and females are called *Chi Pu* (Chicken Bustard). The last are undoubtedly the "Ki Pou" of Père David (Nouv. Arch. Mus. Paris, Bulletin, 1867, p. 38), quoted by Swinhoe (P. Z. S. 1871, p. 402) as

“Kepoo.” So far as is known, there is but one Bustard in China.

Bustards pass the port of Newchwang on migration, and winter on the neighbouring plains.

205. *Glareola orientalis* Leach.

Glareola orientalis D. & O. p. 431 ; La T. p. 579.

The Eastern Pratincole passes from the middle of April to the beginning of May. It is very abundant on the return passage from the end of August to the end of September. The birds generally fly in very scattered order and in large flocks. Solitary specimens as well as flocks may be seen settled on the plain and in the marshes during the migration season.

This bird summers on the plains about Newchwang.

206. *Arenaria interpres* (L.).

Streptilas interpres D. & O. p. 433.

The Turnstone was obtained by the Rev. Geo. D. Wilder at Peitaiho, the well-known summer resort situated about 10 miles west of Chinwangtao, in August.

I observed this bird near Newchwang in May 1889.

207. *Vanellus cristatus* Wolf & Meyer.

Vanellus cristatus D. & O. p. 422 ; La T. p. 580.

The Lapwing passes from early in March until the last ten days in April. In autumn I have seen it as early as the 21st of September and as late as the 9th of November.

208. *Microsarcops cinereus* (Blyth).

Chettusia cinerea D. & O. p. 422.

Microsarcops cinereus La T. p. 580.

The Grey Lapwing is apparently not common in spring. At this season I have seen it on the 26th March and in April. On the return passage it is extremely abundant from the middle of August and throughout September. In 1913, I saw one as late as the 10th of October. Large flocks follow one another on suitable days, many of these settling for a time on the marshes or on the plain.

209. *Charadrius dominicus fulvus* Gm.*Charadrius fulvus* D. & O. p. 424.

The Eastern Golden Plover is rare at Chinwangtao. I shot one on the 1st of October, 1911, and have not identified any others since. I believe, however, that I have seen flocks passing at the end of August.

I found this Plover common at Newchwang at the end of August and in September.

210. *Squatarola helvetica* (L.).*Squatarola helvetica* D. & O. p. 424 ; La T. p. 580.

The collectors shot on the 24th of May 1913, an example in full breeding plumage of the Grey Plover and saw a few others on the 20th and 23rd of April and on the 8th and 24th of May of that year. One was seen on the 19th of October, 1911.

211. *Ochthodromus veredus* (Gould).*Ægialitis veredus* D. & O. p. 425 ; La T. p. 580.

I saw a flock of the Eastern Dotterel on the 14th of April, 1911, on the plain, but have seen none since.

212. *Ochthodromus geoffroyi* (Wagler).*Ægialitis geoffroyi* D. & O. p. 426 ; La T. p. 580.

An example of the Large Sand-Plover was shot by the collectors on the 22nd of May, 1913. One was obtained by Mr. A. de C. Sowerby at Peitaiho on the 20th of July, 1916.

213. *Ochthodromus mongolicus* (Pall.).*Ægialitis mongolicus* D. & O. p. 427 ; La T. p. 580.

Two examples of the Mongolian Plover were shot by the collectors on the 16th of May, 1913, and three others were seen on the same day.

214. *Ægialitis placida* (Gray).*Ægialitis placidus* D. & O. p. 428 ; La T. p. 580.*Ægialitis placida* Dresser, Ibis, 1908, p. 488, pl. x. (egg).

Hodgson's Ringed Plover summers in the district. I saw two at the end of May, 1911, which were apparently paired,

and in 1915 a number of eggs were brought to me by my collector, who had taken them on the stony beaches of the Shanhaikuan River (Shih Ho) in April and May. On the 2nd of May of that year, I went out to search for the eggs myself with the collector, and during the course of a day's hunt saw a number of empty nests. One containing four eggs was found. The old bird sneaked away at once, but on our lying down a few yards from the nest, it was soon seen running cautiously among the stones and it settled down again on the eggs. An attempt to photograph the bird on its nest having failed, I took the eggs, which were incubated, but not too far advanced to preserve. This nest, like all the others seen that day, was a rounded depression among the shingle and had a thin lining of scraps of twigs or grass. The nests were placed among the stones some distance from the water. The birds lay from about the middle of April to the first week in May. There are four eggs in a clutch. These vary in shape from an ovate with a much pointed apex to a pyriform shape, occasionally much pinched in at the apex. There is a moderate gloss. The ground-colour is a pale greyish green, sometimes a dull reddish clay. The eggs are finely speckled with light or dark reddish brown and lilac. The latter colour is on the surface as well as within the shell. The speckling is often thicker on the large end, but few have it so dense as to form a cap. Thirty eggs average 1.41×1.04 in., and measure from 1.37 to 1.51 in. in length and from 0.99×1.07 in breadth. The plate in 'The Ibis' represents a very dull and red type which only a few of my specimens resemble.

215. *Ægialitis dubia* (Scop.).

Ægialitis dubius D. & O. p. 429.

Ægialitis minor La T. p. 580.

The Lesser Ringed Plover arrives early in April and is common during that month in the marshes. It breeds commonly on the stony reaches of the Shih Ho, from which

locality I have clutches dated 12th and 30th April, 14th, 15th, 18th, and 29th May, and June. May is, however, the month when eggs are most commonly found. While searching for eggs on the 2nd of May, 1915, I saw only empty nests. The birds were numerous that day and were noticed pursuing one another and calling loudly as they flew. The nests are merely depressions among the shingle and contain no lining, a few small pebbles only being found in them. The eggs are buff, rarely pale buff, and are marked all over with specks and short lines of very dark and light brown over underlying grey spots. A few eggs are, in addition, scantily marked with large spots of blackish brown. One egg out of a series of 39 has the ground-colour white with a tinge of grey. Another from the same series has a cap of uniform dull brown, overlaid with the usual markings, and the apical half has a coat of dark buff, only a ring of the true buff ground-colour showing between the two. The eggs are without gloss. The most general shape is a pyriform-ovate, but pyriform eggs are common, an ovate sometimes occurs, and the apex is often much pinched in. Thirty-nine eggs range from 1.25 in. to 1.10 in. in length and from 0.92 in. to 0.83 in. in width, the largest being 1.25 × 0.89 in. and the smallest 1.12 × 0.83 in. They average 1.17 × 0.87 in.

216. *Ægialitis alexandrina* (L.).

Ægialitis cantianus D. & O. p. 430; La T. p. 580.

The Kentish Plover is common in spring on the mud flats and shores of tidal creeks. It passes again in September.

217. *Hematopus osculans* Swinhoe.

Hematopus osculans D. & O. p. 432; La T. p. 580.

The Chinese Oystercatcher is not commonly seen in the vicinity of Chinwangtao. I saw one flying over on the 20th of May, 1911, another was reported as having been shot in March 1912, and two were seen by the collectors on the 22nd of May, 1913.

218. *Himantopus candidus* Bonnat.

Himantopus candidus D. & O. p. 462 ; La T. p. 580.

I have an example of the Black-winged Stilt, which was shot in May 1911 at Launchow. In 1913 Stilts were seen several times at Chinwangtao between the 12th of April and the 16th of May.

219. *Recurvirostra avocetta* (L.).

Recurvirostra avocetta D. & O. p. 461.

I saw two Avocets in the Chinwangtao market one late autumn.

I noticed this bird on the banks of the river Liao near Newchwang in April 1889.

220. *Ibidorhynchus struthersi* Vigors.

Ibidorhynchus struthersi D. & O. p. 456, pl. 118.

Père David states that the Ibis-Bill is a resident in the mountains of Chihli and that it nests among the shingle on the banks of the mountain streams. It was only in the spring of 1915 that I was first made aware of the occurrence of this bird in this vicinity by my collector bringing me two eggs taken by him on the 23rd of April, which he said belonged to a Curlew-like bird of grey plumage with red bill and legs. On the 2nd of May following, I set out with my man to try to find the bird and secure more eggs. We worked up the stony bed of the Shih Ho (Shanhaikuan River) to the place where the eggs mentioned above had been taken, and the empty nest was shown to me. It was a saucer-shaped depression among the stones of a shingly beach, not far from the banks of the main stream some two or three miles from the mountains. This depression was lined, as described by Mr. Dresser (Ibis, 1907, p. 323), with small stones, all of much the same size, and it was about eight inches in diameter. A few paces further on we came on another empty nest resembling the first nest, and on our way back to the river-bank we found a third nest—this one with an added egg in it. During the afternoon, as I was searching

the neighbourhood of this reach, I saw an Ibis-Bill feeding in the shallows a couple of hundred yards from me, which my man identified as the kind of bird to which the eggs he had brought me belonged. This one flew off at long range, and my collector told me the birds were extremely wild during the nesting-season. In winter they are more easily approached, and at that season they are to be found among the mountains. Owing to its protective colouring this bird is hardly visible against a background of water and shingle. The flight is low, not rapid, and reminds one of that of certain Sandpipers. My collector subsequently brought me two more eggs taken on the 22nd of May following; in 1916 a clutch of four were taken on the 9th of April, and subsequently a clutch of four were taken by him in the same locality on the 14th of April, 1918; these last were sent to the British Museum without being measured. He also shot on the 20th of September, 1915, a bird of the year in immature dress. The bill of this bird was dark red, the legs pale pinkish-mauve.

The eggs taken on the 23rd of April and 22nd May, 1915, and 9th April, 1916, bear a general resemblance to those figured by Mr. Dresser (Ibis, 1907, pl. vi.), but are perhaps rather greener. The ground-colour is, when fresh, of a greyish-green, which turns somewhat red after a time. The spots are reddish-brown and reddish-purple. The addled egg found on the 2nd of May is greyer and the markings, which are large, are faint—possibly washed out. It is of a somewhat broad-ovate, while the other eggs are of a truer ovate. These nine eggs measure as follows:—

23 April, 1915, two eggs 1.99×1.50 , 2.06×1.48 inch.

2 May, „ one egg 1.88×1.50 inch.

22 „ „ two eggs 1.88×1.42 „

9 April, 1916, four „ 1.97×1.47 „

1.97×1.49 „

2.07×1.42 „

2.05×1.45 „

221. *Numenius arquatus* (L.).

Numenius lineatus D. & O. p. 457.

Numenius arquatus La T. p. 581.

Curlew are met with in spring from the last decade in March to the end of May, and pass again very early in July. I have heard them calling at night as early as the end of June, but it may be that birds heard so early in the season were wanderers from neighbouring breeding-grounds. I saw three undoubted Common Curlew on the 21st of April, 1912, and the collectors recorded seeing them from the 31st of March to the 28th of May, and shot one out of three on the 28th of August, 1917; but, as a rule, the Curlew in this vicinity keep to the inaccessible mud-flats, and it is difficult to ascertain with certainty whether the birds belong to this or the following species.

The Curlew passes Newchwang on migration.

222. *Numenius cyanopus* Vieillot.

Numenius tahitiensis D. & O. p. 458.

Numenius cyanopus La T. p. 581.

The Eastern Curlew was noted in 1913 from the 12th of April to the 3rd of May. It is very probable that the birds heard at night in summer are of this species. I have seen them in September.

This Curlew breeds, I believe, on the plains near Newchwang.

223. *Numenius phaeopus variegatus* Scop.

Numenius phaeopus D. & O. p. 457.

Numenius variegatus La T. p. 581.

The collectors recorded the Eastern Whimbrel throughout May 1913. I have seen it passing on the 27th of August and on other dates. It is quite a common migrant both in spring and in early autumn.

I noticed this bird on migration at Newchwang.

224. *Mesoscolopax minutus* (Gould).

Numenius minutus D. & O. p. 458.

Mesoscolopax minutus La T. p. 581.

The Little Curlew passes in spring during the latter half

of April and the first week in May. It is extremely abundant on passage during September.

I noted this bird as a migrant at Newchwang in 1889.

225. *Limosa limosa melanuroides* Gould.

Limosa brevipes D. & O. p. 460.

The Eastern Black-tailed Godwit passes in August. I shot a young bird out of a party of three on the 25th of August, 1912, and was shown another a couple of years afterwards on the 9th of August.

This Godwit was very abundant at Newchwang in April 1889, and was observed again at the end of August and in September of that year.

226. *Terekia cinerea* (Güldenst.).

Terekia cinerea D. & O. p. 460; La T. p. 581.

The Terek Sandpiper was observed and shot by the collectors from the 1st to the 16th of May, 1913. Mr. Sowerby procured an example in breeding plumage at Peitaiho in July 1916.

This Sandpiper was observed by me at Newchwang in April.

227. *Tringoides hypoleucus* (L.).

Tringoides hypoleucus D. & O. p. 467.

Totanus hypoleucus La T. p. 581.

The Common Sandpiper passes in May, August, and September.

228. *Totanus glareola* (L.).

Totanus glareola D. & O. p. 464; La T. p. 581.

The Wood-Sandpiper appears to be the commonest Sandpiper at Chinwangtao. It passes towards the beginning of May and from the beginning of August to the first week in September.

229. *Totanus ochropus* (L.).

Totanus ochropus D. & O. p. 465; La T. p. 581.

The Green Sandpiper passes from the end of April to probably the end of May. A pair seen inland on the banks

of a stream were very possibly preparing to breed. It no doubt passes with the other Waders in August and September, but I have no recorded observations for those months. I have, however, observed it on the 11th of October.

230. *Totanus calidris* (L.).

Totanus calidris D. & O. p. 464; La T. p. 581.

The Redshank passes at the end of March and was also recorded during the first half of May 1913 by the collectors. I believe I have seen it in August.

This Sandpiper and the preceding three species were observed on migration at Newchwang in the late summer and early autumn of the year 1889. The Green Sandpiper was the first to appear, and was to be seen singly or in small parties on the banks of pools and in marshy spots.

231. *Totanus fuscus* (L.).

Totanus fuscus D. & O. p. 463; La T. p. 581.

The Dusky Redshank has been observed at the end of March and beginning of April, in September, and early in October.

232. *Totanus incanus brevipes* Vieillot.

Totanus incanus D. & O. p. 466.

On the 13th of September, 1915, I saw on the shores of the Junk Harbour at Chinwangtao two grey Sandpipers which appeared to me to be the Eastern Grey Sandpiper, The Rev. Geo. D. Wilder shot an example in summer plumage at Peitaiho in August 1916, and I have seen two others shot in the same locality in September by Mr. Hubbard of Paoting-fu.

233. *Totanus glottis* (L.).

Totanus glottis D. & O. p. 462.

The Greenshank passes in September and October. It doubtless passes also in spring, but I have no records. Mr. Sowerby obtained one in summer plumage at Peitaiho on the 15th of July, 1916.

This Sandpiper was seen by me at Newchwang in 1889 in spring and on the return passage.

234. *Calidris arenaria* (L.).

Calidris arenaria D. & O. p. 467; La T. p. 581.

Tringa acuminata La T. p. 581.

On the 22nd of May, 1911, I shot on the seashore at Chinwangtao two Sandpipers in breeding-dress which I noted down as Sharp-tailed Stints and put away without comparing them. On examining one of these birds lately, I found it was a Sanderling. I unfortunately recorded the party of Sandpipers out of which I shot these examples in my paper on Chinwangtao migrants (Ibis, 1914, p. 581) as *Tringa acuminata*. This species, although there is no doubt that it passes there, must for the present be eliminated from my list.

A second party of Sanderlings was met with by me at the same place on the 18th of May, 1913, out of which I shot three examples which formed part of the collection made that year for the Migration Committee of the B. O. C.

Mr. Sowerby obtained an example in summer plumage at Peitaiho on the 17th of July, 1916.

235. *Tringa minuta ruficollis* Pall.

Tringa ruficollis D. & O. p. 472 (part).

Mr. A. de C. Sowerby obtained the Eastern Little Stint in summer plumage at Peitaiho on the 16th of July, 1916.

This bird was abundant on the marshy plain near Newchwang in September 1889.

236. *Tringa damacensis* Horsf.

Tringa ruficollis D. & O. p. 472 (part).

The Long-toed Stint was obtained by Mr. Sowerby in worn summer plumage at Peitaiho on the 14th of July, 1916. I shot this bird at the marshes near Chinwangtao on the 22nd of August and 3rd of September following.

237. *Tringa temminckii* Leisl.

Tringa temminckii D. & O. p. 473.

I shot a Temminck's Stint on the 25th of August, 1912.

238. *Tringa crassirostris* T. & S.*Tringa crassirostris* D. & O. p. 468.

The Eastern Knot was obtained by Mr. Sowerby in summer dress at Peitaiho on the 17th of July, 1916.

239. *Tringa canutus* (L.).*Tringa canutus* D. & O. p. 469.

The Knot was also obtained by Mr. Sowerby at Peitaiho on the 17th of July, 1916. The specimen submitted to me was in full summer dress.

240. *Tringa subarquata* (Güldenst.).*Tringa subarquata* D. & O. p. 472.

A specimen of the Curlew-Stint in part summer plumage (worn above and mixed with winter plumage on the underparts) obtained by Mr. Sowerby at Peitaiho on the 18th of July, 1916, was sent to me for investigation together with the other Waders mentioned above.

241. *Tringa cinclus americana* Cass.*Tringa cinclus* D. & O. p. 471.*Tringa americana* La T. p. 581.

The collectors shot on the 3rd of May, 1913, a Pacific Dunlin in summer plumage out of a party of five. I shot one of two birds on the 12th of October following. This bird is a young bird putting on winter plumage. Mr. Sowerby procured at Peitaiho on the 14th, 16th, and 18th of July, 1916, three examples in summer plumage.

Dunlins were abundant on the Newchwang plain in September 1889.

242. *Tringa platyrhyncha* Temm.*Tringa platyrhyncha* D. & O. p. 470.

A Broad-billed Stint in summer plumage, shot on the 14th of July, 1916, was among the Waders sent to me by Mr. Sowerby from Peitaiho.

243. *Scolopax rusticola* L.*Scolopax rusticola* D. & O. p. 475 ; La T. p. 582.

The Woodcock is found at Chinwangtao during April and

May and again in September. It is not at all uncommon during the latter month.

Woodcock were not rare on passage at Newchwang during September in the 'eighties of last century.

244. *Gallinago solitaria* (Hodgs.).

Gallinago solitaria D. & O. p. 476, pl. 122.

I have a handsome example of the Himalayan Solitary Snipe bought in the Chinwangtao market on the 20th of December, 1914. It was in perfect condition and must have been shot only a few days previously. It is evidently a winter resident in the mountains of Chihli, as on the Yangtse.

245. *Gallinago megala* Swinhoe.

Gallinago megala D. & O. p. 477; La T. p. 582.

Swinhoe's Snipe passes in May and during the last ten days of August. It is much less common about Chinwangtao than the Pintail and Common Snipe.

246. *Gallinago stenura* Horsf.

Gallinago stenura D. & O. p. 478; La T. p. 582.

The Pin-tailed Snipe passes in May and again throughout August and during the first few days of September. It is more or less abundant, according to the state of the ground.

247. *Gallinago caelestis* Frenz.

Gallinago scolopacina D. & O. p. 478.

Gallinago caelestis La T. p. 581.

The Common Snipe arrives towards the end of March or early in April, according to the season, and remains during the first half of May. I shot a belated bird on the 16th of June, 1913. It begins to pass again during the last half of August, and in suitable spots remains throughout September. Laggards may be found in October and even in November. I put up one from a stream in the uplands north of the port on the 26th of November, 1911. The temperature that day was so cold that the water we had with us for drinking-purposes froze solid in the bottle.

In September 1913, owing probably to the favourable condition of the marshes in this vicinity, Snipe of this species swarmed there during the first half of the month. As a rule, April, May, and September are the months during which the birds are most abundant.

248. *Limnocryptes gallinula* (L.).

Gallinago gallinula D. & O. p. 479.

Sir Francis Aglen, K.B.E., Inspector-General of the Chinese Maritime Customs, informed me that he had shot a Jack-Snipe near Peitaiho, the well-known seaside resort near Chinwangtao, towards the end of August 1915. Père David states that foreign sportsmen assured him that they had shot this bird near Peking. I have the wings, legs, and head of a plucked bird which had been purchased in the Shanghai market, and also a skin of a bird shot at Foochow on the 12th of October, 1910, for which I am indebted to Mr. C. B. Rickett.

249. *Rostratula capensis* (L.).

Rhynchæa capensis D. & O. p. 480.

I have a single male example of the Painted Snipe shot by Sir Francis Aglen, K.B.E., at the marshes near Chinwangtao on the 11th of September, 1916. It is the only bird of this species seen by me from that locality.

250. *Larus ridibundus* L.

Chroicocephalus ridibundus D. & O. p. 520.

Larus ridibundus La T. p. 582.

Migrating parties of the Laughing Gull appear towards the middle of March and the birds are abundant until the first week in May, after which they disappear, to begin passing again early in July. Birds seen travelling in July appeared to still have the hood. They may be seen in July and August flying along the coast, going south-west. I have seen them until very late in November on the tidal creeks, but I do not think that any winter here.

The Laughing Gull was common at Newchwang during my stay there in 1889.

251. *Larus canus* L.*Larus canus* D. & O. p. 517.

I have seen one Common Gull hanging in the market, and noticed medium-sized Gulls about the harbour and coast which were doubtless of this species.

This Gull was common at Newchwang in 1889.

252. *Larus argentatus vegæ* Stejn.*Larus occidentalis* D. & O. p. 520.*Larus vegæ* vel *cachinnans* La T. p. 519.

Large Herring-Gulls pass at much the same seasons as the Laughing Gull, and are to be seen often during the winter about the harbour or passing over the plain. Those seen at fairly close quarters appeared to be the Pink-legged Herring-Gull. A few specimens are to be seen hanging in the game-shops in winter.

Larus crassirostris was common at Newchwang in 1889, but I have no certain note of its occurrence at Chinwangtao. If it does occur, it is very rare.

253. *Larus cachinnans* Pall.*Larus cachinnans* D. & O. p. 520.

On the 29th of November, 1914, I saw an immature example of the Mediterranean Herring-Gull hanging in a game-shop in the village.

254. *Larus glaucus* Brünn.

On the 5th of February, 1917, I observed among a number of Gulls in the harbour two Glaucous Gulls. I had not noticed this species at Chinwangtao before, but it is quite possible that I had overlooked it. The winter 1916-1917 was exceedingly cold and the port was ice-bound for some time, so that the presence of these Gulls here was probably due to the severe weather-conditions prevailing at the time.

255. *Hydrochelidon hybrida* (Pall.).*Hydrochelidon hybrida* D. & O. p. 524.

The Rev. Geo. D. Wilder shot a specimen of the Whiskered Tern between Peitaiho and Chinwangtao on the 31st of July,

1916, and saw that day many flocks of this Tern passing down the coast.

256. *Hydrochelidon leucoptera* (Schinz).

Hydrochelidon leucoptera D. & O. p. 524; La T. p. 582.

The White-winged Black Tern passes in spring and is very abundant during the latter half of August, when it travels along the coast in flocks.

I noticed this Tern on the Newchwang plain in May and June, and on the River Liao on the 11th of August, 1889.

257. *Gelochelidon anglica* (Mont.).

Sterna anglica La T. p. 582.

A single example of the Gull-billed Tern was seen at the port on the 4th of May, 1913.

258. *Sterna hirundo tibetana* Saunders.

Sterna fluviatilis D. & O. p. 525.

I have seen numbers of medium-sized Tern passing in flocks during August and September which were probably this species or *S. longipennis*, but none were collected. My collector, however, brought me at the beginning of July 1915 ten eggs and an example of *S. tibetana* from the coast, about twenty miles W.S.W. of Chinwangtao, where he found this Tern breeding among the sand-dunes. These eggs are brownish olive, deep buff, and yellowish-green, with spots and large blotches of dark brown over inky purplish-grey blotches, the latter being on the surface as well as within the shell. The shape varies from a somewhat oval-ovate to broad-ovate. The longest egg measures 1.75×1.18 in., the shortest 1.53×1.17 in., the broadest 1.66×1.23 in., and the narrowest 1.64×1.13 in. The ten eggs average 1.64×1.18 in.

259. *Sterna sinensis* Gm.

Sternula sinensis D. & O. p. 527.

Sterna sinensis La T. p. 582.

The Chinese Tern arrives about the fourth week in May and breeds commonly in the district. It lays three eggs in

a depression in sand-banks in the vicinity of water (rivers or sea). I have eggs dated 29th May, 2nd, 4th, 5th, and 8th June, end of June, and July, taken on the Shanhaikuan River and down the coast. The eggs are buff, greenish-buff, and pale yellowish-green, spotted with brown or reddish and purplish-grey, the latter in different shades and both on the surface and within the shell. The spots are generally small and sometimes are partly concentrated in a rough zone. The general shape is ovate or oval-ovate. Thirty-two eggs average 1.29×0.96 in. The longest measures 1.37×0.96 in., the shortest 1.19×0.92 in., the broadest 1.28×0.98 in., and the narrowest diameter (three eggs) is 0.91 in.

This Tern remains somewhat late, and may be seen fishing in the marshes until about the middle of October.

I saw flocks of this Tern flying over the plain near Newchwang in May and June, and also on the River Liao on the 11th of August, 1889.

260. *Phalacrocorax carbo* (L.).

Phalacrocorax carbo D. & O. p. 532; La T. p. 582.

Cormorants pass in spring from the end of March to the end of April, and are not uncommonly seen during the autumn passage. One observed sitting on the rocks on the 11th of August, 1912, appeared from its size to be *P. pelagicus*.

261. *Fregata ariel* (Gould).

Attagen minor D. & O. p. 534.

I saw on the 19th of August, 1915, circling over the cliffs and harbour at Chinwangtao, a large bird which must have been a Lesser Frigate-bird. On the 5th of October following, a friend saw circling over the harbour a large black bird with deeply forked tail, which was doubtless another example of this bird. The Smaller Frigate-bird occurs in summer on the coast of south-east China and has been seen or taken on the Lower Yangtse and at Shaweishan, but until 1915 it had not been noticed so far north on the China coast.

Towards the end of July 1889, I saw on the river at Newchwang a brown Albatross. This bird allowed a native to fire at it repeatedly at very close range without rising from the water. After several shots had been fired, it rose, apparently none the worse, and sailed away, passing a hundred yards or so from the boat I was in.

262. *Ibis melanocephala* (Lath.).

Ibis melanocephala D. & O. p. 452.

A white Ibis with black head and neck seen at the marshes on the 5th of October, 1913, was without doubt an example of the White Ibis.

When at Newchwang, in 1889, I was given a skin of the Japanese Crested Ibis (*Nipponia nippon*) by Mr. Farmer, then Constable of H.B.M.'s Consulate at the port, who told me that he had seen a breeding-colony of these birds some way up the River Liao. I saw a flock fly over the settlement towards the end of the autumn.

263. *Platalea leucorodia* L.

Platalea major D. & O. p. 451 (part).

I saw a Spoonbill passing on the 13th of October, 1912, and shot another on the 12th of October, 1913. The latter bird, a male, is in fresh immature plumage. The shafts of the wing-quills and the tips of these are black. The colours of the soft parts were as follows:—Iris dull burnt-sienna; bill livid violet-black at the base, the greater part of the upper mandible yellow with black stripes; skin of throat and lores yellow; legs and feet black, the soles spotted with yellowish. Bill 9·35 in., wing 15·5 in.

264. *Ciconia ciconia boyciana* Swinhoe?

Ciconia boyciana D. & O. p. 450.

Four very large white birds with black wings seen passing on the 20th of November, 1910, were most probably White Storks. I have a male example purchased in the market at Chinwangtao. It is almost adult.

265. *Ciconia nigra* L.*Ciconia nigra* D. & O. p. 450.

The Black Stork breeds, I am informed, among the high rocks in the mountains about 30 miles north of Chinwangtao. I saw it soaring overhead on the 30th and 31st of October, 1911. It passes regularly in spring and autumn. I have two adult specimens shot in this neighbourhood :—

♀, 2nd Nov., 1915. Bill crimson, skin round the eye and chin vermilion; legs crimson, the scales on the front of the tarsus and on feet black, soles of feet vermilion. Total length 41·20 in., wing 22 in., tarsus 8 in., tail 9·30 in., culmen 7·30 in.

♂, 4th March, 1916. Soft parts as above. Total length 43·75 in., wing 23·30 in., tail 10·20 in., culmen 7·4 in., tarsus 8·40 in.

I saw, while riding on the plain near Newchwang, in 1889, two large birds, which were without doubt Black Storks.

266. *Ardea manillensis* Meyen.*Ardea purpurea* D. & O. p. 438.*Ardea manillensis* La T. p. 583.

The Eastern Purple Heron is common on migration. It was specially abundant in 1911, when I saw numbers in the marshes on the 14th of April. On the 6th of October following, some 200 passed over the plain. It passes in April, May, September, and October.

267. *Ardea cinerea* L.*Ardea cinerea* D. & O. p. 437; La T. p. 582.

The Grey Heron is an abundant migrant. It passes from the latter half of March to the end of May and from the last ten days of July to the end of October. A few must summer in the vicinity of Chinwangtao, as I have seen twice in the early summer a pair which were evidently settled for the breeding-season. Hard-sat eggs were brought to me on the 26th of May, 1917, and two young birds the following June.

I saw the Grey Heron at Newchwang in May 1889.

268. *Herodias alba* L.*Herodias alba* D. & O. p. 439.

A single Great Egret was seen at the marshes on the 5th of November, 1911.

Large white Herons, seen near Newchwang on the 19th of May, 1889, were most probably of this species.

269. *Butorides javanicus amurensis* Schrenck.*Butorides macrorhynchus* D. & O. p. 443.*Butorides amurensis* La T. p. 583.

The collectors saw an example of the Little Green Heron on the 31st of May, 1913; I saw another at the port on the 22nd of May, 1914. A friend sent me a live adult bird on the 4th of June, 1914, which I released after taking measurements and noting the colour of the soft parts. These were as follows:—Iris yellow, lower mandible and sides of upper mandible and skin of lores greenish-yellow, legs yellowish-green. Wing 7·80 in., culmen 2·50 in.

270. *Botaurus stellaris* (L.).*Botaurus stellaris* D. & O. p. 446; La T. p. 583.

The Bittern is often seen on migration. It occurs from the end of March and during April, and during the latter half of September and the first few days of October.

271. *Nyctiardea nycticorax* (L.).*Nyctiardea nycticorax* D. & O. p. 444; La T. p. 583.

The Night-Heron was shot by the collectors on the 29th of March, 1913, and seen by them on the 29th of April following. I believe that I saw one in the marshes on the 28th of September, 1913.

272. *Ardetta eurhythmia* Swinhoe.*Ardetta eurhythmia* D. & O. p. 447; La T. p. 583.

Von Schrenck's Little Bittern summers in the district. I saw a specimen on the 28th of May, 1911, the collectors shot one on the 20th of May, 1913, and I have a specimen taken in autumn by a native hunter.

I collected a male example at Newchwang on the 19th of May, 1889.

273. *Ardetta sinensis* (Gm.).*Ardetta sinensis* D. & O. p. 448.

I have not obtained any specimens of the Chinese Little Bittern in the vicinity of Chinwangtao, but I have a number of the eggs of the bird, which were brought to me from the Hsien Chia Ying marshes and which had been taken in June and July.

274. *Cygnus cygnus* (L.).*Cygnus ferus* D. & O. p. 493.

An example of the Whooper was exposed for sale in the market during January 1912.

A handsome adult Swan, which I originally took to be of this species but which I now think must be an adult male *C. jankowskyi*, was brought to me alive on the 19th of March, 1917. It had been snared and was quite uninjured. This bird lived in our yard throughout the summer and did not appear to suffer from the summer heat. It was successfully taken to Shanghai when we left Chinwangtao in the following October and was given to Père Courtois, the Curator of the Sikawei Museum, who has placed it, together with the other wild fowl presented to him by me that autumn, in a large enclosure attached to the Museum. This Swan refused all food until the 22nd of March, when it ate some soaked bread. The next day it ate boiled green beans, and until late in the summer, when it began to eat the bran and kaoliang given to the other wild fowl in the yard, it would touch nothing but these boiled green beans. It became fairly tame after a few weeks, but never came up to ask for its food like the wild geese did. At the end of March it began to call, the sound being a gentle "cook cook." Later in the summer and in the autumn it occasionally uttered a loud call sounding something like "waw" or "wow." Several times during the spring this bird and its companion in captivity (a ♂ *jankowskyi*) were seen to perform a curious wild dance round the yard, running madly with open wings and uttering love screams. I did not witness these performances myself, but they took place in the presence of my children, who reported the facts to me.

The somewhat orange-yellow patch on the bill and forehead of this Swan does not extend beyond the nostril, reaching only to the posterior end of the aperture. It measured from the feathers on the forehead 1.4 in. in length. The culmen and bare forehead together measured 4.4 in. The shape of the head is rounded, the feathering stopping at a line *above* the eye.

275. *Cygnus jankowskyi* Alphéraky.

Cygnus minor D. & O. p. 494.

Cygnus jankowskyi La T. p. 584.

I saw Swans on five occasions during March 1911, and the collectors saw several large parties and flocks in March 1913, and on the 1st of April that year. Since then I have not noticed them passing, but most probably overlooked the passage. An example shot at the Hsieh Chia Ying marshes by the collectors was identified by Mr. Ogilvie-Grant as being a specimen of Jankowski's Swan. I have two others : an adult bird shot here on the 19th of March, 1911, and an immature bird from Shanhaikuan, shot at the end of March or beginning of April 1914.

I purchased a winged adult bird on the 17th of March, 1917, which I kept in our yard until the following October, when I took it to Shanghai with the other Swan mentioned above. This bird recovered from its wound after a few weeks, but it was several days before it would feed. Eventually it took to a diet of boiled green beans and, like its unwounded companion, ended by eating also the soaked bran and kaoliang given to the other wild fowl. Many weeks passed, however, before it would eat in the presence of anyone. The iris of this bird when it was in my possession was greyish, and the bird's facies was very different from that of its companion. The line of the forehead feathering was prolonged at an angle over the base of the upper mandible, the feathering reaching to a distance from which a line could be drawn *through* the centre of the eye, whereas in the other Swan, as noted above, this feathering stopped

above the eye. The shape of the head was also different, being angular, not rounded as in the other bird.

Père Courtois considers these two Swans to be both *jankowskyi* (see Ois. du Musée de Sikawei, p. 120, Man. conc. l'Hist. Nat. de l'emp. Chinois, Tome v. 3^{me} cahier, 1918).

Swans were abundant on passage at Newchwang during the spring of 1890, and the natives brought several, both alive and dead, for sale.

Mr. A. L. Hall, who was for some years stationed in northern Chihli, on the borders of the Gobi desert, informed me that he had shot Snow-Geese there. These birds are said to occur near Tientsin. *Cygnus davidi* so far has not been re-discovered. The type has been apparently lost.

276. *Anser cygnoides* (L.).

Anser cygnoides D. & O. p. 493.

The only Swan-Goose seen by me here is one which I shot at the marshes on the 10th of October, 1912. It was a wounded bird, a male in poor condition, probably a bird of the year, as the bill showed no sign of a tubercle. Culmen 2.5 in., wing 16.7 in.

This Goose used to be abundant at the mouth of the River Liao (near Newchwang). I shot several there in 1889 from the beginning of September.

277. *Anser anser rubrirostris* Hodgson.

Anser cinereus D. & O. p. 491.

Anser rubrirostris La T. p. 583.

The Eastern Grey Lag-Goose appears to be uncommon. Two specimens shot in March at the Hsieh Chia Ying marshes are in the British Museum.

278. *Anser segetum* (Gm.).

Anser segetum D. & O. p. 491 (part); La T. p. 583.

The Bean-Goose is apparently very common during times of passage, judging from the proportion of these birds shot

as compared with the other Bean-Geese. Specimens collected in the spring of 1913 were all shot from the 19th to the 31st of March.

Geese pass in spring from the end of February to the middle of April, and in autumn from the end of August or beginning of September to the 5th or 6th of November.

I kept at Chinwangtao live examples of the Common Bean-Goose. One which I had for two years was purchased from a hawker in the autumn of 1915. It was extremely tame from the very beginning, and has since become the inseparable companion of two domestic ganders, following them everywhere and showing much distress when separated from them, honking loudly until re-united to them. During the winter it suffered much from the cold and at that season constantly uttered a plaintive squeak. During the hot weather it was almost equally incommoded, and then ran about the yard seeking shelter with a perpetual tremulous honk. It moulted the contour-feathers in the spring and the wing-quills in September. This Goose was very jealous of the other wild geese in the yard, and would attack them and chase them away.

I have noticed that these birds appeared to be fond of cooked meat.

Bean-Geese were very abundant at Newchwang in the spring of 1890.

279. *Anser segetum serrirostris* Swinhoe.

Anser segetum D. & O. p. 491 (part).

Anser serrirostris La T. p. 583.

The Eastern Bean-Goose is about as common on passage as *Anser segetum*. I have seen or shot examples in March and October. I purchased two live winged birds in March 1917—one escaped, but the other became sufficiently domesticated and was also sent to Shanghai in October 1917. This bird had a deep honk very different from that of the Goose mentioned above. It had a trick of standing sentry on a low wall in the yard, where it would remain for a long time, and often, if disturbed, it would walk off balancing itself

like a tight-rope dancer along the sharp-edged ridge or coping of the wall.

280. *Anser middendorffi* Severtz.

Anser segetum D. & O. p. 491 (part).

Anser middendorffi La T. p. 583.

A specimen of the Great Bean-Goose was shot at Chinwangtao on the 29th of October, 1911, and two at the Hsieh Chia Ying marshes on the 29th of March, 1913, and in March 1914. Besides these I have one from Shaweishan, at the mouth of the Yangtse, and there is another shot at Fu-an, in north-eastern Fokkien, on the 3rd of January, 1914, which is in the British Museum (Natural History). This fine Goose, which may be distinguished at a glance from the other Bean-Geese found in the Far East by its very long and large bill, is not very rare on the coast, and it is strange that it should have been overlooked by Swinhoe. It is, however, by far the least common of the Chinese Bean-Geese. Tang Wang-wang, my former collector at Foochow, wrote to me this last winter that this Goose was very abundant in January 1916 in the Shanghai market. Two males in my collection from Shaweishan and Hsieh Chia Ying measure 19 in. in the wing. The bills in five specimens measure as follows: Culmen 72 mm. to 86 mm. Number of teeth 24 to 29.

Mr. Sowerby, in his 'Sportsman's Miscellany,' mentions the shooting of several of these Geese on the Yangtse, where he states they are numerous. The weight of one, shot by Mr. H. E. Gibson of Shanghai, is given in this work (p. 90) as having been 13½ lbs.

281. *Anser albifrons* (Gm.).

Anser albifrons D. & O. p. 492; La T. p. 583.

The White-fronted Goose is quite common in spring. It passes in March and during the first half of April. I have no record of the autumn passage.

The soft parts of birds shot are:—Bill pinkish-flesh, nail white; legs orange; the rim of the eyelid is brown.

The following are measurements of four birds in my collection:—

Foochow, ♂	Culmen 1·75 in.	Wing 16·25 in.
„ ♂	„ 1·97 „	„ 16·50 „
Chinkiang	„ 1·75 „	„ 16·75 „
Chinwangtao, ♀ ...	„ 1·50 „	„ 15·75 „

282. *Anser erythropus* (L.).

Anser erythropus D. & O. p. 492 ; La T. p. 583.

I shot a Lesser White-fronted Goose on the 14th of April, 1911, out of a flock which was resting on the plain. A flock of small Geese, seen passing over on the 6th of April, 1913, was probably composed of this species. The soft parts of the bird shot were as follows:—Iris brown ; rim of eyelid yellow ; bill pink with a dark spot on the nail ; legs orange. The culmen measures 1·25 in. and the wing 14·90 in. Sex ♀.

White-fronted Geese were very common at Newchwang in the spring of 1890. I procured a specimen which, to the best of my recollection, was of the larger species.

283. *Tadorna cornuta* (Gm.).

Tadorna belonii D. & O. p. 497.

Tadorna cornuta La T. p. 584.

The Common Sheldrake passes in April and from mid-September to mid-October.

284. *Casarca rutila* (L.).

Casarca rutila D. & O. p. 497 ; La T. p. 584.

The Ruddy Sheldrake winters on the plain. It passes throughout March to the beginning of May and in autumn from the latter half of October.

285. *Anas boschas* L.

Anas boschas D. & O. p. 495 ; La T. p. 584.

The Mallard is one of the commonest Ducks. I have observed it from the beginning of March to the beginning of May, and from the 20th of September to the beginning of

November. A few winter in the mountains on unfrozen streams.

A winged bird kept with the fowls and a tame duck became very friendly with the latter, and after a few months lost most of its natural shyness, feeding with the domestic bird and quacking with it in concert when its food was brought to the chicken-yard.

286. *Anas zonorhyncha* Swinhoe.

Anas zonorhyncha D. & O. p. 496; La T. p. 584.

The Yellow-Nib Duck passes in March and April, and from the beginning of September to November. It probably breeds here as elsewhere in China. I have seen it hanging in the game-shops in the market during January.

This Duck was observed by me near Newchwang in early summer.

287. *Eunetta falcata* (Pallas).

Eunetta falcata D. & O. p. 504; La T. p. 585.

The Falcated Teal is extremely abundant from the middle of March to the beginning of May and during the latter half of September, remaining until the end of October, and occasionally during November, as four were noted on the 13th of November, 1911.

A winged bird, purchased in the spring of 1913, partly put on eclipse plumage late in the summer. The forehead, crown, lores, and sides of the head became brown, the forehead and crown being barred with deep buff. Scapulars brown, vermiculated or barred with dull light reddish-brown; the flanks reddish-brown, evenly barred with pale rufous, ring round the neck deep brown; chin and sides of neck speckled with brown.

288. *Chaulelasmus streperus* (L.).

Chaulelasmus streperus D. & O. p. 499; La T. p. 585.

I shot a male Gadwall on the 12th of April, 1911, and a female on the 28th of September, 1913. This is one of the less common Ducks in China.

289. *Nettion formosum* (Georgi).

Eunetta formosa D. & O. p. 503.

Nettion formosum La T. p. 585.

The Spectacled or Baikal Teal is extremely abundant on passage. It passes from about the 10th of March to the end of that month, and from the beginning of September to the end of October.

290. *Nettion crecca* (L.).

Querquedula crecca D. & O. p. 503.

Nettion crecca La T. p. 585.

The Common Teal is very abundant in spring and autumn. It passes from about the 10th of March to about the 20th of April, and from the beginning of September to the end of October. As I have seen it in the winter in the game-stalls in the market, it is most probable that a few winter in the mountains.

This Teal was one of the commonest Ducks at Newchwang in 1889-90.

291. *Mareca penelope* (L.).

Mareca penelope D. & O. p. 499 ; La T. p. 585.

I saw and shot Wigeon in April 1911 and April 1913, and saw one shot in October 1912. It does not appear to be so common as most of the Ducks.

292. *Dafila acuta* (L.).

Dafila acuta D. & O. p. 498 ; La T. p. 584.

The Pintail is perhaps the most abundant of the larger Ducks. I have seen it from the end of February to the middle of April, and from the middle of September to the end of October.

The Pintail was with the Common Teal the most abundant Duck at Newchwang in 1889-90.

293. *Querquedula circia* (L.).

Querquedula circia D. & O. p. 502 ; La T. p. 585.

The Garganey appears at the end of March and during September. In 1913 it was seen as late as the 31st of May.

294. *Æx galericulata* (L.).*Aix galericulata* D. & O. p. 501.*Æx galericulata* La T. p. 584.

A female Mandarin-Duck was shot by the collectors on the 17th of April, 1913. This is the only specimen of this species that I have seen here.

The Mandarin-Duck was found breeding in Manchurian forests by Mr. A. de C. Sowerby.

295. *Spatula clypeata* (L.).*Spatula clypeata* D. & O. p. 500; La T. p. 585.

The Shoveler is to be seen on passage from about the 10th of March to the middle of May, and again commonly during the first fifteen days of October. It doubtless occurs also in September.

296. *Fuligula ferruginea* (Gm.).*Fulix nyroca* D. & O. p. 507.

The White-eyed Duck is extremely abundant during the latter half of September and beginning of October. It remains until the end of the latter month. This Duck, which is said by Père David to abound near Peking in spring, has never to my knowledge been recorded on the Lower Yangtse or in south-east China, but I believe that two or three White-eyed Ducks seen in the Shasi (Hupeh province) market on the 25th of February, 1918, were of this species.

297. *Fuligula marila* (L.).*Fulix marila* D. & O. p. 507.

I saw several Scaup on the 16th of April, 1916, on the large pond at Chinwangtao.

298. *Fuligula cristata* (L.).*Fulix cristata* D. & O. p. 508; La T. p. 585.

The Tufted Duck is common in spring and in October.

299. *Clangula clangion* (L.).*Bucephala clangula* D. & O. p. 505.*Clangula clangion* La T. p. 585.

The Golden-Eye is common in spring during March and April, and from the beginning of October until the marshes freeze over. In winter it may be seen on the sea near the shore in open places, and it is the commonest Duck exposed for sale at that season.

300. *Harelda glacialis* (L.).*Harelda glacialis* D. & O. p. 506.

I procured an immature male of the Long-tailed Duck in the market on the 5th of April, 1916, and on the following day an adult female. These would appear to be the second and third examples of this Duck to be recorded from northern China. The first known example, according to Père David, was shot at Taku (mouth of the Peiho). The measurements and colour of soft parts of the birds obtained at Chinwangtao were as follows:—

♂. Iris hazel-brown; upper mandible black with orange-red band just before the nail, lower mandible dark pink along the edge and pale pink along the middle; legs very pale grey with dark webs and joints. Culmen 1·15, wing 8·70, tail (worn) 3·00, tarsus 1·50, total length 17·30 in.

♀. Iris hazel; base of upper and lower mandible pale dull green, culmen and apical part of upper and lower mandible blackish; legs as in the male. Wing 8·65, total length 17 in.

301. *Oidemia carbo* (Pallas).*Oidemia fusca* D. & O. p. 504.*Oidemia carbo* La T. p. 585.

I obtained females and an adult male of the Eastern Velvet Scoter in the market during December 1912 and on the 6th and 21st of February following; Captain Stewart, 124th Baluchis, gave me two adult males, found by him dead or dying on the seashore. These and the male obtained

in the market were greatly emaciated, merely skin and bone, and had evidently died of starvation. The stomach of all three birds was empty, containing but one broken bivalve. The same year (1913) the collectors met on the 14th of April a man with a number of netted birds, just caught. The soft parts of the birds obtained in winter were coloured as follows :—

♂. Bill, tubercle and base black, apical half yellow with triangular red patch on either side of the culmen; legs and feet vermilion with blackish joints and webs.

♀. Bill black; legs brownish black washed with reddish.

302. *Mergus albellus* (L.).

Mergellus albellus D. & O. p. 509.

Mergus albellus La T. p. 586.

The Smew may be seen in October and at the beginning of November, and probably winters. It is commonly seen in the game-shops during winter. It passes also during March and April.

303. *Mergus merganser* (L.).

Mergus merganser D. & O. p. 510; La T. p. 585.

Specimens of the Goosander are often seen in the market during the winter. I have noticed this bird in late autumn, and probably some winter on the mountain streams.

304. *Colymbus septentrionalis* (L.).

Colymbus septentrionalis D. & O. p. 512.

A Diver, seen in a game-shop at the end of November, was apparently a Red-throated Diver. I have seen at various times in spring and autumn Divers fishing in the harbour or its vicinity, but I did not ascertain to what species they belonged.

305. *Podiceps minor philippensis* (Bonnat.).

Podiceps philippensis D. & O. p. 512.

The Dabchick is common on ponds during October and in spring. I have an example from the Chienan district.

306. *Podiceps nigricollis* (Brehm).

Podiceps nigricollis D. & O. p. 513.

A Grebe, seen on the pond at Chinwangtao, on the 16th of April, 1916, appeared to be the Eared Grebe.

307. *Podiceps cristatus* (L.).

Podiceps cristatus D. & O. p. 514.

The Great Crested Grebe appeared in March and April, and in autumn is seen as late as the middle of November. I have seen this bird fishing in the harbour during the latter month, and shot one on a creek on the 17th of November, 1910.

III.—*On some Western Australian Birds collected between the North-West Cape and Albany (950 miles apart).*
By THOMAS CARTER, M.B.O.U., M.R.A.O.U. *With Nomenclature and Remarks by* GREGORY M. MATHEWS, M.B.O.U., M.R.A.O.U.

(Text-figure 1.)

[Continued from Ibis, 1920, p. 719.]

Hirundo neoxena carteri.

Western Welcome Swallows were not commonly observed (except those at Dirk Hartog Island in May 1916, as already recorded in 'Ibis,' October 1917) until 1 April, 1919, when there were great numbers perched on the telegraph-wires near Busselton, and more of them in the town itself. A few were seen at Lake Muir on 17 March, and a good many on the telephone-wires between Augusta and Cape Leeuwin, 4 April, 1919, and also in the same position at Cape Naturaliste Lighthouse on 11 April.

Cheramœca leucosternum marngli.

Western Black-and-White Swallows are not commonly seen in the south-west, but are always fairly plentiful about Carnarvon, where colonies of them breed in the perpendicular banks of the Gascoyne River about September ;

here I saw many of them so engaged in that month in 1913 and 1916. Most of the nests seemed to contain young birds towards the end of September. On 19 August, 1916, several were seen at some sandy cliffs north of Maud's Landing, where they used to nest regularly in former years.

Hylochelidon nigricans neglecta.

Western Tree-Martins were constantly seen in all districts visited. When I was staying at the Point Cloates Light-house in 1916 there were a few days of exceedingly rough and cold weather in the first week in July, the temperature being down to 45° F. at sunrise. On several mornings, from three to six dead Tree-Martins were laid on the verandah. Fledged young birds were seen at Minilya on 9 September, 1916, being fed by the parents, and also at Broome Hill on 23 February, 1919.

Lagenoplastes ariel conigravi.

Western Fairy Martins are very local in distribution. The only place where any were seen was at the Minilya Station early in September 1916. About sixty nests had been built in the cart-shed, attached to the underside of the corrugated-iron roofing. All the young birds had left the nests on that date. I was told by Mr. McLeod that many nests were detached by the alternate expansion and contraction of the iron.

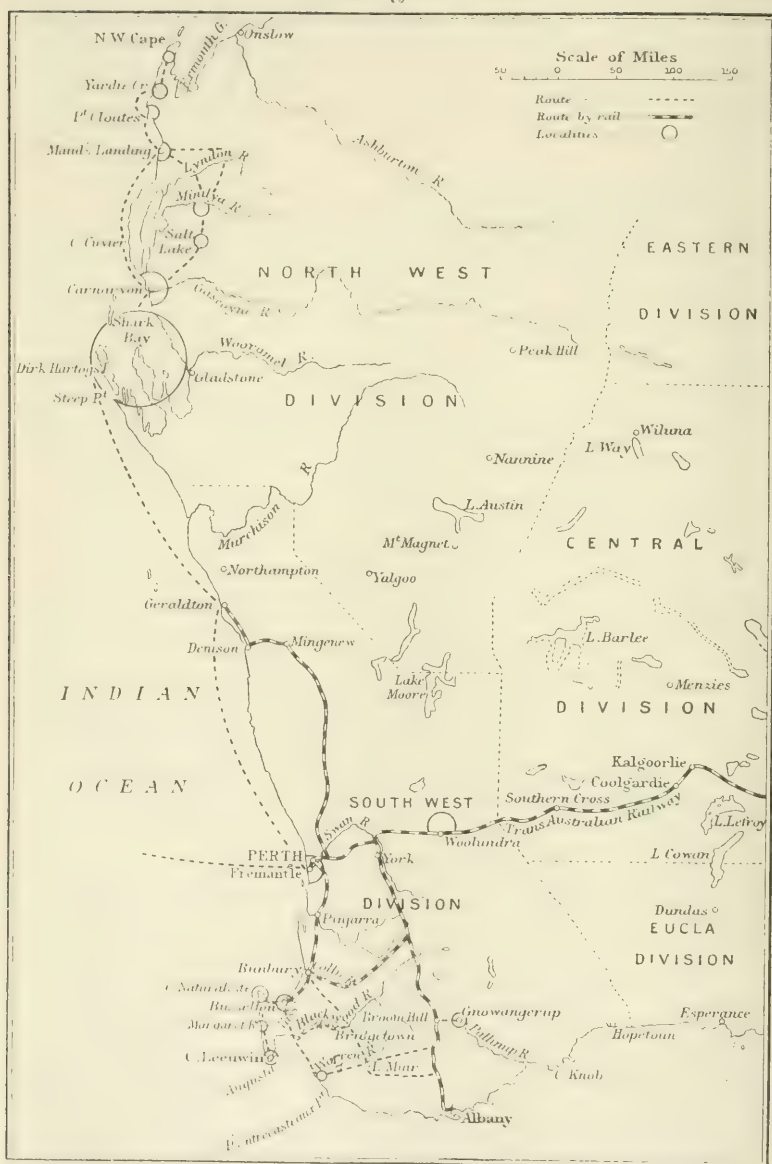
Petroica multicolor campbelli.

Western Scarlet-breasted Robins were frequently seen in all south-western districts.

Whiteornis goodenovi ruficapillus.

Western Red-capped Robins are usually only seen in the winter months (May to October) about Broome Hill, and I was surprised to see one there on 3 February, 1919. Several were seen about Woolundra (one hundred and fifty miles north of Broome Hill) on 23 May, and many others from Carnarvon to North-West Cape on different trips in

Text-figure 1.



Map of part of Western Australia to show Mr. Carter's localities and route.

the winter months, when they are usually fairly common there.

Melanodryas cucullata westralensis.

Western Hooded Robins were seen in the Broome Hill district, where they are fairly common, but do not seem to occur in the heavily timbered areas to the south-west. They were also noticed all along the North-West Cape ranges.

Smicrornis brevirostris occidentalis.

Westralian Tree-Tits were abundant about Broome Hill and Gnowangerup in February and March 1919, especially in the thickets of dwarf eucalyptus (Maa-lock, Mallet, etc.).

Ethelornis tenebrosa christopheri.

Allied Dusky Fly-eaters, first obtained by me in the mangroves at Carnarvon in September 1911 (*cf.* Mathews, Nov. Zool. xviii. 1912, p. 311), were numerous then, and also in September 1913 and June 1916; but between the 18th and 27th of September in the latter year I only saw one bird, which was a breeding male, and failed to discover any nests. This is a very unobtrusive little bird, and tame in disposition, going about in small parties, and often in company with *Zosterops lutea balstoni*. Only one was noticed in the large patch of mangroves near the North-West Cape, where I spent four days early in August 1916. None were seen in the mangroves of Peron peninsula, Shark Bay.

Ethelornis fusca fusca.

Western Fly-eaters were very plentiful in young eucalyptus trees at Lake Muir in March 1919, and were seen in lesser numbers in other south-west districts.

Quoyornis georgianus.

Only two White-breasted Shrike-Robins were seen in the course of the four visits to the south-west, viz., one near Cape Leeuwin in March 1916, and one at the Warren River

in March 1919. None were noticed in the vicinity of Cape Mentelle, where they were not uncommon when I was there in 1903, and the coastal scrubs were intact. This is a very seclusive, quiet species, feeding on the ground beneath thick scrub, especially near any small brook.

Pachycephala pectoralis occidentalis.

Western Thickheads were common about Broome Hill, and all south-western districts.

Lewinornis rufiventris didimus.

I did not see a single specimen of the Southern Rufous-breasted Thickhead on my 1919 trip, although they are usually common about Broome Hill.

Gilbertornis inornata gilbertii.

No Black-lored Thickheads were seen in February or March 1919 about Broome Hill, although they are usually fairly numerous there, their loud notes speedily attracting attention.

Alisterornis lanioides carnarvoni.

The type of the Carnarvon White-bellied Thickhead was obtained by me on 28 September, 1913 (see Mathews, 'Austral Avian Record,' vol. ii. p. 75). It was an immature male, apparently breeding, and my attention to it was attracted by the loud melodious thrush-like notes that it was uttering, as it fed under some dense mangroves. When I picked the bird up, my first impression was that I had secured a new Shrike-Thrush, to which species there is a striking resemblance in the plumage of female and immature birds, and also in the size of the beak.

On 30 September, 1913, I saw a similar bird, also below some mangroves, busily eating small crabs and other crustacea on the edge of the receding tide. This specimen was a female with enlarged ovaries. My next visit to these mangroves was early in June 1916, and on the 6th of that month I shot a male bird in full plumage, but dissection showed that it was not breeding then. I searched all the

mangroves round where I had obtained it, but saw no more of these birds, nor any nest, in the vicinity; but in other mangroves, about a mile distant, I saw several of them, on different dates, feeding on small crabs near the edge of the sea. One of these which I shot, for breeding data, was a female, and not breeding. I left Carnarvon on 17 June, hoping to find these birds breeding on my return, which was on 18 September, but between that date and the 27th, when I sailed again for Shark Bay, I failed to see any. I should say that their breeding season is from July to September.

A comparison of the skin of the full-plumaged male bird mentioned above, with others in the Perth Museum from localities north of the North-West Cape, showed sufficient differences to warrant subspecific distinction.

Eopsaltria gularis gularis.

Grey-breasted Shrike-Robins were observed all through the south-west areas, and were most plentiful in the vicinity of Gnowangerup and Broome Hill.

Rhipidura flabellifera preissi.

Western Fantails were common in the south-west districts.

Leucocirca leucophrys leucophrys.

Black-and-White Fantails were common in all south-western localities, except Augusta and the Margaret River, where none were observed. They were also seen from Shark Bay to Point Cloates, where they occur as winter visitors, but are not plentiful.

Seisura inquieta westralensis.

A few Western Restless Flycatchers were seen at Broome Hill in February 1919, and at the Vasse River.

Pteropodocys maxima neglecta.

Western Ground Cuckoo-Shrikes were seen at Broome Hill in February 1919, on two or three occasions. I shot

one out of a party of three, and one of the remaining birds showed the greatest concern at the fate of its companion, hovering close round it, until it was picked up.

This elegant bird is very local in its distribution, and does not occur in heavily-timbered districts. I have seen more of them about Broome Hill than in any other locality.

Coracina novæ-hollandiæ westralensis.

Western Black-faced Cuckoo-Shrikes were seen in most of the south- and mid-western districts, and were common about Broome Hill and Lake Muir early in 1916 and 1919. Eggs were noted in a nest at the Minilya River on 19 September, 1911, and recently fledged young at the Vasse River on 16 February, 1916.

Lalage tricolor tricolor.

White-shouldered Caterpillar-eaters were fairly common, and breeding, in the Gascoyne and Minilya districts in early September, 1913 and 1916.

Drymodes brunneopygia pallida.

Pale Scrub-Robins occur in the scrub country at Broome Hill, and also a long way east of it (Mathews, Reference List, 1913, only gives mid-west Australia as its range in that State). A male bird in full moult was obtained at Gnowangerup on 13 February, 1919, the only one seen in the course of my trips. It is a very shy species, and easily overlooked.

Hylacola cauta whitlocki.

The Western Ground-Wren is another shy bird that occurs to the east of Broome Hill, and is usually seen in thick scrub, growing on stony or rough ground. I was fortunate in seeing a good many of them in mid-February 1919, and obtained a few specimens; but they are difficult to shoot on account of the great speed at which they hop and move about under the bushes, with tails erect. They remind me, by their rapid elusive movements, of the *Diaphorillas* at Shark Bay.

Pomatostomus temporalis rubeculus.

Red-breasted Babblers did not seem to be breeding on the lower Minilya River on 19 August, 1911. Recently fledged young birds were seen there on 2 September, 1916.

The above locality is the only one where I have regularly seen these birds, which appear to be always present at the same place. They do not seem to occur on the Lower Gascoyne River, but are common on the upper parts.

Morganornis superciliosus ashbyi.

Western White-browed Babblers were commonly seen about Broome Hill, and the inland areas of the south-west, which are not so heavily timbered as the coastal parts. I had never seen any of these birds between the Vasse and Warren rivers until 31 March, 1919, when I came upon a small party near Warren House. A specimen obtained seemed to be a typical *M. s. ashbyi*.

Morganornis superciliosus gwendolenæ.

The Carnarvon Babbler is a good subspecies, being much smaller than the south-western form, *M. s. ashbyi*. These birds were, as usual, plentiful in the scrub around Carnarvon in 1911, 1913, and 1916. Fledged young birds were noted there on 19 September, 1911, and three eggs were found in a nest on 23 September, 1913. As compared with a series of eggs of *Morganornis s. ashbyi* from Broome Hill, the Carnarvon eggs are much shorter, having both ends very round and blunt, and are .84 of an inch in length, those from Broome Hill averaging .96. The Carnarvon eggs are heavily blotched all over with purplish brown, and the black hair-streaks, which are usually numerous on eggs of *M. s. ashbyi*, only appear on two of the Carnarvon eggs, and are limited to one long streak on the large end of each.

Calamanthus fuliginosus carteri.

Western Striated Field-Wrens were seen in mid-February 1919, on scrubby sand-plains about thirty miles south-east of Broome Hill, and, as usual, were very wary. When staying at Woolundra, about one hundred and fifty miles north of

Broome Hill, in May 1919, I saw and heard a *Calamanthus* on sand-plain country, but failed to obtain a specimen, having no gun at the time. It would be interesting to identify the birds occurring there.

Calamanthus campestris rubiginosus.

Rusty-red Field-Wrens were seen at Maud's Landing, and specimens obtained during the last week of August 1911; also at Maud's Landing and Point Cloates at the same time in 1913, and in early July in 1916, when a breeding male was obtained on 7 July at Point Cloates. These birds breed immediately after any heavy rainfall, irrespective of the season.

Cincloramphus cruralis clelandi.

Western Brown Song-Larks were common from Carnarvon northwards, on my visits in that district, from early June to October.

Macleannania mathewsi mathewsi.

The above note also applies to the Western Rufous Song-Lark, which species was particularly common about the sandy banks of the Gascoyne River. Recently fledged young were noted on 8 September, 1911.

Epiphthianura albifrons westralensis.

Westralian White-fronted Chats were common in south-western localities, except in 1919, when very few were seen, the only instances being at Lake Muir, when a small party was seen on 21 March, and considerable numbers on a bare sand-drift at Cape Naturaliste on 13 April, but they were unusually wild, and no specimens were obtained at either place.

Parepiphthianura tricolor assimilis.

Westralian Tricoloured Chats were common from Carnarvon to Point Cloates in 1913 and 1916. On 24 August, 1913, a male bird was flushed from a nest containing two incubated eggs. Two nests, each containing four incubated eggs, were found on the 11th and 16th of September at

Point Cloates and Carnarvon, respectively. Other nests examined between 24 August and 16 September contained young birds.

Aurephthianura aurifrons flavescens.

Western Orange-fronted Chats were scarce about Carnarvon and farther north in 1911, but not uncommon on salt-marshes and samphire-flats in August and September, 1913 and 1916. Recently fledged young were seen on Maud's Landing salt-marsh on 21 August, 1916.

Conopoderas australis gouldi.

Long-billed Reed-Warblers were not so plentiful in January 1916 and March 1919 at the large freshwater swamps adjoining Lake Muir as I had found them on previous visits; but when leaving there on 22 March, 1919, Mr. Higham and myself found a small reedy swamp, near the south end of the Lake, where Reed-Warblers and Grass-birds abounded, and we obtained specimens of both.

Poodytes gramineus thomasi.

Dark Grass-birds were common on the edges of the freshwater swamps at Lake Muir in December 1911, but scarce when I was there in January 1916. On my next visit, in March 1919, they were fairly common, and abundant at the swamp mentioned above. A female shot there on 22 March appeared to have been recently breeding. One of these birds, obtained at Augusta on 7 April, had the underparts tawny yellow, where it is whitish on the series of skins I have obtained at Lake Muir and Albany.

Eremiornis carteri carteri.

When at the Yardie Creek, from 26 August to 5 September, 1913, I failed to see any Desert-birds, and had the same bad luck when there again for six days in mid-July, 1916; so I left there on 25 July, and drove slowly north, carefully searching any patches of large Buck Spinifex (*Triodia*) on my way, but without any result until the 29th, when I was camped with two aborigines who had joined me,

at a rock-hole of very bad water at the foot of the ranges. We had been systematically hunting through, and beating masses of spinifex, often breast high, that grew round our camp, for four days, when I heard the familiar "chat-chat" of a Desert-bird, which I had not heard for thirteen years. After twice flushing the bird, I shot it, and not being able to find where it had fallen, called up one of the natives to help me, and he very nearly spoilt the specimen by treading on it, as it lay on a flat piece of rock between two masses of spinifex, missing it by a bare inch. It was a male bird, and undoubtedly breeding at the time. We spent two more days there, but failed to see or hear any more of them, so moved on towards the North-West Cape, as so much time was lost in climbing the ranges to obtain drinking-water there, as described in the itinerary of this paper. No traces of Desert-birds having been seen farther north, I camped at the same place on my return journey on 11 August, with the same native. Soon after our arrival, we flushed one of these birds from a large bunch of spinifex, and I thought it looked smaller than usual. I did not shoot, as I wanted to see whether the bird had a nest ; so three times, at intervals of half an hour or more, I cautiously visited and tapped the bunch, but without any results ; so we got the small axe out of the buggy, and by the aid of it and a strong sheath-knife, cut and pulled that bunch to pieces without finding any trace of a nest or seeing the bird. Another careful search all round, the next day, yielded no results, so I thought that the bird seen was probably one of a recently fledged brood, and as my time-limit for returning the hired buggy to Maud's Landing had nearly expired, I drove south again, alone, having sent the native back to the Cape.

As I was driving along, late in the same afternoon, I saw a Desert-bird in some big spinifex, so tied up my horses and had a fruitless search in the vicinity, but could not camp there as my horses wanted water, the nearest being several miles farther south, where it had to be dug out with a conch-shell from a depth of about six feet of loose drifting beach-sand. However, I got them watered there before

dark, and camped. Next morning I had my breakfast before daylight, and getting in the horses, by 7 A.M. drove back to where I had seen the bird the previous afternoon, and spent nearly all day there, beating through and through the spinifex, with intervals of watching. One of the birds was twice flushed in different places (or it might have been the same one), but although I carefully pulled all the spinifex to pieces near where I had seen them, no nest was discovered. I did not shoot at the birds, as I hoped to find a nest through their movements. The only result after all my work, was to discover that the right hammer of my .410 gun had been hopelessly lost through the screw working loose and falling off when I was tapping the spinifex bunches with the barrel, which was not a good thing to do.

When I reached Minilya Station I made a new hammer from a piece of quarter-inch flat iron, cut to shape, that acted quite well for the rest of the trip, and I have it yet. I shall always think that my enforced stay of three weeks at Point Cloates lighthouse was the cause of my not being the first to discover the nest and eggs of *Eremiornis*, but Mr. Whitlock well earned that distinction by his untiring efforts.

Acanthiza pusilla apicalis.

Broad-tailed Tits were common in all south-western districts, and especially so in the vicinity of Broome Hill and Lake Muir.

Acanthiza inornata mastersi.

South-western Plain-coloured Tits were common in the south-western area, and especially in the more heavily timbered districts, as Lake Muir, Warren River, Collie, and Blackwood. They do not seem to occur about Broome Hill.

Acanthiza inornata carnarvoni.

The type of the Carnarvon Tit (Mathews, 'Austral Avian Record,' vol.ii. 1913, p. 76) was obtained by me on 13 August,

1913, in low *Melaleuca* scrub near Carnarvon, and is, I believe, the only specimen to date. It was one of a small party of these birds, and when shot, it fluttered out of sight, and while finding it, the rest of the birds vanished in the bushes, and I could not see them again. Although on many occasions on that trip, and subsequent ones, I often traversed the same ground, not a single *Acanthiza* of any sort was seen between Shark Bay and the North-West Cape during my trip in 1916.

Pyrrholæmus brunneus pallescens.

Pallid Redthroats were common in the scrub around Carnarvon, and north of there. Recently fledged young were noted on 26 August, 1911. These birds make a peculiar fluttering noise with their wings when flying.

Sericornis maculatus warreni.

Scrub-Wrens were common in the coastal scrubs at the mouths of the Warren and Blackwood rivers, also at Collie and Cape Naturaliste, in March and April, 1919. Only one of these birds was seen by me at the Vasse River; this was on 21 March, 1916.

Malurus splendens splendens.

Banded Wrens were very scarce about Lake Muir in January 1916, only one being seen there, but they were plentiful at the Vasse River in February that year, many being seen in full plumage. Very few were seen anywhere in March and April, 1919, excepting about Augusta. No full-plumaged males were observed in 1919.

Hallornis leuconotus exsul.

Recently fledged young of the Western White-winged Wren were seen at Carnarvon on 28 August, 1911. These birds were scarce in the mid-west in 1911 and 1913, but very common in 1916, when good rains fell from Carnarvon northwards. They were breeding at Maud's Landing on 23 June, and at Point Cloates and farther north in July. On 27 August, 1916, I found a nest with one addled egg

near the Lyndon River; a female bird was sitting on the egg. I concluded that the other young birds had been safely hatched out, and gone away with another female. The nest was about a foot from the ground, made of fine grasses and partly domed, and looked as if it had seen a lot of wear.

Leggeornis lamberti occidentalis.

Western Blue-breasted Wrens were not plentiful about Carnarvon in 1911 and 1913, but very numerous from there to the North-West Cape, from early June to September in 1916. A party of fledged young, with the parent birds, were seen feeding upon insects in heaps of dry seaweed on the beach at Carnarvon on 25 September. These birds are constantly seen feeding in dense mangroves, where insect life is abundant. I shot a full-plumaged male in mangroves one day, and saw it fall, evidently dead, a few yards from me. When I reached the place, the bird had disappeared. The same thing happened again, and I began to look into some of the numerous holes of the crabs that were plentiful under the mangroves, thinking the Wren might have fallen into one of them, and saw a crab backing down its burrow and dragging the bird after it. I at once thrust my hand in, but it was too large for the cavity, and though I eventually forced the full length of my hand and arm down, the crab got away with its booty. On another occasion I shot a *Zosterops balstoni* in mangroves, and keeping my eye fixed on it as it lay dead, I saw it suddenly disappear by being seized by a crab from below.

As previously stated in this paper, I once saw a Whistling Eagle pick up a Stilt before me, as it floated dead on a pool of water; and another time a Tree-Creeper (*Climacteris*) that fell into some scrub was snapped up by a lurking Monitor (large lizard), which disputed (unsuccessfully) my right to the bird; and I have seen dead ducks pulled below the surface of the water in lakes by freshwater turtles, before the birds could be retrieved—but this “crab-snatching” was quite a new thing.

Leggeornis elegans.

Only one party of Red-winged Wrens was seen in the south-west, viz. at Augusta, on 6 April, 1919, with one full-plumaged male. None were observed on the Warren River, where in 1910 I saw a good many. Mr. Higham obtained some specimens in May 1919 at Gingin, about thirty miles north of Perth.

Leggeornis pulcherrimus stirlingi.

Although a good look-out was kept for South-western Blue-breasted Wrens, only one party of five was seen, in sand-plain scrub, thirty miles east of Broome Hill. They were in full moult.

Stipiturus malachurus westernensis.

Westralian Emu-Wrens were common about Augusta and Cape Leeuwin, 1916-19.

Stipiturus melachurus media.

The type-specimen of this Emu-Wren was obtained by me a few miles east of Gnowangerup (thirty miles south-east of Broome Hill) on 12 February, 1919 (*vide* Mathews, Bull. B. O. C. xl. 1919, p. 45). Several small parties of these birds, from three to six in number, were seen in scrubby sand-plain country, which is practically always dry, and devoid of any surface water. In general plumage this subspecies is lighter in colour than *Stipiturus m. westernensis*, and distinctly smaller in size. It comes midway between that bird and *S. m. hartogi*, and is a good subspecies. The habits of all three are similar. On 26 July, 1908, I shot a similar bird on a sand plain a few miles east of Broome Hill, but never saw any other there.

Although the Stirling Ranges are only about twenty miles distant to the south of where the type was secured, Whitlock does not record having seen any Emu-Wrens there in his 1911 expedition (see 'Emu,' vol. xi.), and Milligan in his account of his trip there in 1902 ('Emu,' vol. iii.) only records having seen one bird, that was not secured.

Sphenura brachyptera longirostris.

No signs of Long-billed Bristle-birds were seen or heard in any of the coastal scrubs that were visited in the south-west area, although I spent several days at the place where the last known birds were seen some years ago; but the localities where these birds may still be living extend along such a great stretch of the coast, and are so densely clothed in scrub, that it is very easy to miss seeing such a very shy and seclusive species.

Artamus leucorhynchus leucopygialis.

The first time White-rumped Wood-Swallows were ever seen by me was at Carnarvon on 24 September, 1911, when a small party was flying about Babbage Island, but were very wild. Many of these birds were seen at exactly the same place and same day of month in 1913, and some specimens obtained. No examples were seen in 1916.

Campbellornis personatus.

Masked Wood-Swallows were numerous about Broome Hill in early January 1916. These birds are very erratic in their visits.

Austrartamus cinereus tregellasi.

Black-vented Wood-Swallows were seen in the Gascoyne and Minilya districts on all three trips, but were most plentiful in 1916, when many nests containing eggs or young were seen in September. A nest with three eggs was seen at the Minilya on 9 September, 1911.

Angroyan cyanopterus.

Wood-Swallows were common in the south-west districts.

Micrartamus minor derbyi.

Little Wood-Swallows were only seen in Shark Bay, and in some of the deep gorges in the North-West Cape ranges, where they breed in holes of the cliffs. When at the Yardie Creek on 26 August, 1913, I saw the parent birds feeding their young in a nest that was out of sight in a crevice of the roof of a large cave.

Colluricincla rufiventris rufiventris.

Buff-bellied Shrike-Thrushes were common about Broome Hill and south-west localities. In the Gascoyne and Point Cloates districts these birds are mostly found in stony ranges, and are common in all the gorges of the North-West Cape ranges, where their song is quite different from that of the southern birds. On 7 August, 1916, I found a nest, four feet from the ground, in the fork of a small white-gum tree, in a gorge near the North-West Cape; it contained two young birds about half-grown, and the male bird was sitting on them.

Grallina cyanoleuca cyanoleuca.

Magpie-Larks were more numerous about Broome Hill than any other locality. They do not occur much in heavily timbered districts. When at Lake Muir in March 1919, Mr. Muir asked me the name of a pair of these birds, which were feeding near his homestead, as he said he had never seen them before during his long residence there, and that the birds had only recently arrived.

Gymnorhina hypoleuca dorsalis.

Western White-backed Magpies were noted in all districts between Woolundra and Broome Hill, at which latter place they are very abundant, but I think they are even more plentiful about the Vasse River. They do not occur in the heavily timbered south-western localities, but are gradually working their way along there as the country is cleared and opened out. None were seen at the Margaret River or Augusta, and only odd birds at the Collie. On 16 January, 1916, I saw fledged young being still fed by the parent birds at Broome Hill; and on 24 February, 1917, I saw a tame bird of the previous year that was completely white in plumage, with pale fleshy bill and legs. The irides were blue, with a slight tinge of pink. It would be about five months old. When at the Vasse River on 27 February, 1916, I saw these Magpies eating many figs off the trees at a homestead, and also digging up with their beaks, and eating, freshly planted grains of maize.

Cracticus nigrogularis kalgoorli.

Western Black-throated Butcher-birds were breeding on the Lyndon River on 5 September, 1911. They were rather common in May 1919 about Woolundra, which is probably near their southern limit of range.

Bulestes torquatus leucopterus.

White-winged Butcher-birds were common about Broome Hill and south-western localities, excepting Augusta and the Margaret River, where none were seen. Several of them were observed at Woolundra, where the Black-throated birds give them a bad time, by constantly attacking them. A specimen of the White-winged was obtained by me on 13 September, 1916, about midway between the Gascoyne and Minilya rivers, the first time this bird was ever seen by me in that district. Shortridge does not mention having seen this subspecies about the Gascoyne River in 1908 (*Ibis*, 1909, p. 669).

Falcunculus frontatus leucogaster.

White-bellied Shrike-Tits were commonly seen about Broome Hill, especially early in 1919. Adult birds were seen feeding recently fledged young on 4 March, 1919.

Oreoica gutturalis westralensis.

Western Crested Bell-birds were exceedingly scarce about Broome Hill in early 1919, where they are usually plentiful at all seasons. They were, as usual, fairly common in the Gascoyne and Minilya districts in 1911, 1913, and 1916.

Aphelocephala castaneiventris minilya.

Several small parties of Murchison Whitefaces were seen in mid-September, 1916, in scrubby country midway between the Lower Gascoyne and Minilya rivers, where I had never previously seen any of these birds; but I had obtained specimens in 1904 at Mullewa, three hundred miles to the south. Shortridge found them "fairly numerous as far north as the Upper Gascoyne River (Clifton Downs Station)" in 1908 (*Ibis*, 1909, p. 667); so, at present, the locality where my

specimens were obtained is the most northerly record, being sixty miles farther north, and about one hundred nearer to the coast (westwards) than Clifton Downs. The birds were tame, feeding on the ground below short scrub, into which they took shelter when disturbed.

This bird was first described by Mr. G. M. Mathews (Bulletin B. O. C. vol. xl. 1920, p. 75).

Since writing the above, I have been able, through the courtesy of Dr. P. R. Lowe, to compare the specimens obtained by me with those obtained by Mr. Shortridge, now in the Balston collection at the British Museum (Natural History), and find that the Minilya birds are more rufous on the mantle than any of the others, which were mostly obtained in localities to the south-east—as Laverton, 600 miles south-east from the Minilya, and Day Dawn, about 300 miles to the south-east and midway between the Minilya and Laverton. The specimens from Day Dawn are almost white on the whole of the underparts, and can be separated easily from any of the others. Those obtained on the Minilya can hardly be distinguished from the Clifton Downs birds, which they most resemble.

Sphenostoma cristatum occidentale.

Westralian Wedgebills were, as usual, abundant in the Lower Gascoyne and Minilya scrubs, particularly about the banks of the rivers. I proved that both sexes utter the wonderful metallic ringing notes.

Neositta pileata broomi.

South-west Black-capped Tree-runners were seen in small parties in several south-western localities, including the Margaret, Blackwood, and Warren rivers, and Lake Muir. They were most plentiful about Broome Hill.

Whitlocka melanura wellsii.

The Allied Black-tailed Tree-Creeper (Ogilvie-Grant Ibis, 1909, p. 664) was first obtained by Shortridge on the Upper Gascoyne River, apparently about 1908. I had never

seen a single Tree-Creeper during my long residence in the Gascoyne (Lower) and North-West Cape districts ; but in 1900 I found a deserted egg, that was new to me, in a nest soaked with rain-water in a cavity of a small tree, about sixty miles inland from Point Cloates. I forwarded the egg to Mr. A. J. Campbell at Melbourne, for identification, and he replied that it was undoubtedly the egg of some species of *Climacteris*, and he published a description of it in the 'Emu,' vol. x. p. 299.

The first time I was in the Gascoyne district again, after Mr. Ogilvie-Grant's 1909 'Ibis' paper was published, was in August 1911, and I kept a good look out for *W. m. wellsi*, but saw none on the lower part of the river. However, when travelling south by mail-coach from the Minilya river, on 12 September, I caught a glimpse of what I felt sure were Tree-Creepers in some Jam (Acacia) timber through which we passed, but of course could not follow them. Almost exactly the same thing happened on 18 August, 1913, in the same patch of Jam trees ; but when there next time, on 13 September, 1915, I was able to accept the kind hospitality of my old friend Mr. Harry Campbell, and stay a few days at his station homestead, in the vicinity of which I had seen the birds. Mr. Campbell drove me out a few miles that day, but we had no luck with Tree-Creepers ; but on the 14th I had a long walk round and obtained three specimens of the bird, and found a nest with two young birds almost full grown.

The "Jam" trees grow to a height of about twenty-five feet, with trunks from a foot to twenty inches in diameter, and derive their local name from the sweet scent of the timber, which always reminded me of violets. I was scanning the scattered trees as I walked along through them, and saw ahead of me something rapidly moving in and out from a hole, about eight feet from the ground, in one of them. At first I thought this object was the head of one of the large lizards, or monitors, that are great robbers of eggs and young birds, but getting nearer, saw

that it was the head of a bird, so I shot at it with my .410 gun, and it disappeared in the hole. Upon climbing the tree I found that it was hollow nearly down to the ground, and, thrusting my arm in, could feel a bird fluttering upwards into the upper part of the trunk, which was also hollow. I then withdrew my arm, plugged the hole with my cap, and from the ground carefully examined the lower part of the tree, and through a crevice was fortunate enough to catch sight of the extended wing of a bird, with a buff band across it, so knew I had got a Tree-Creeper at last. I then cut away the extremely hard wood from the edges of the crevice with my knife, until it was large enough to enable me to extract the dead bird, which was an undoubted fledgling of *W. m. wellsi*. I then plugged this hole, and also the larger one above, with bunches of dry grass, and withdrew some little distance to await the return of the parent birds, both of which I obtained in about five minutes; they were just commencing to moult. I then walked back to the station to obtain a small axe, and returning with it to the tree in the afternoon, cut the latter open, but could not find the other young bird.

On the following day I saw another pair of the birds, and by watching them, located another nest, about twelve feet from the ground, in a crevice formed by a split in the main fork of a large, dead Jam tree. The nest was simply a large handful of sheeps' wool, laid on chips of wood, about eighteen inches from the top of the crevice. It contained two young birds, about half-grown. No wool was seen in the first tree that I cut open the previous day. I saw several other adult birds in the next two days of my visit, but found no more nests, and was apparently too late for any eggs, but have no doubt myself that the egg obtained in 1900 was the egg of this new subspecies, which is the only Tree-Creeper found in that area. In habits these birds much resemble *W. r. rufa*, often feeding on the ground, on fallen trunks and branches of trees laid on the ground, as well as on the trunks of standing trees.

Whitlocka rufa rufa.

Rufous Tree-Creepers were common about Broome Hill, and also seen at Woolundra.

Whitlocka rufa obscura.

Allied Rufous Tree-Creepers were observed, and specimens obtained, at Lake Muir, the Warren, Blackwood, Margaret, and Collie rivers. They were all of this darker subspecies, and confirm its validity. The darkest coloured birds were obtained on Big Brook, a tributary of the Warren River from the east.

Zosterops gouldi.

Green-backed White-eyes were common through all the districts visited. Small young were seen in a nest at Carnarvon on 4 August, 1911. These birds were feeding freely on small orange-coloured berries from bushes near the beach at Vasse in February 1916.

Zosterops lutea balstoni.

Carnarvon White-eyes were common in the mangroves near Carnarvon in all my trips, and some specimens shot there on 17 September, 1911, were evidently breeding, but I failed to find any nests. A few of these birds were seen in mangroves near the North-West Cape on 2 August, 1916. None were seen in the mangroves of the Peron Peninsula, in Shark Bay, that year.

Austrodicæum hirundinaceum tormenti.

Western Mistletoe-birds were only seen on two occasions, viz., a pair on the ranges near Point Cloates on 14 July, 1916, and those already recorded (Ibis, 1917, p. 608) on Dirk Hartog Island. Mathews (Ref. List, 1913) only gives North-west Australia and Northern Territory as the range of this bird. Milligan recorded it from the Wongan Hills (100 miles north-east from Perth), and Shortridge from near Kalgoorlie, and I have seen them at several places along the Midland Railway route.

Pardalotus punctatus whitlocki.

Western Red-rumped Pardalotes were common in the Karri forests of the south-west, but not always easy to see, and still less to shoot, when they are high up in the giant trees that average two hundred feet in height, and in the Warren River district often reach three hundred feet.

Pardalotus rubricatus pallidus.

Pale Red-browed Pardalotes were, as usual, fairly plentiful about the beds of the Gascoyne and Minilya rivers, and occasionally seen far out from water-courses. On 10 September, 1916, I shot a female at the Minilya River that contained a fully-formed white egg. On 18 September I noted that a pair of these birds were feeding their young, which were being reared inside a perpendicular iron pipe about two inches in diameter and seven feet in height; this was set upright in the ground just outside a large shearing shed, where shearing was in full progress. The nest was apparently some distance down the pipe.

Pardalotus striatus westraliensis.

Western Pardalotes were common about Broome Hill and all south-western districts. On 1 September, 1916, I shot a pair at the Minilya River, where I had never previously seen any of these birds, nor were they met with at the Gascoyne.

Melithreptus lunatus chloropsis.

Western White-naped Honeyeaters were observed all through the south-west area, where they are one of the commonest birds.

Melithreptus atricapillus leucogenys.

A few Western Brown-headed Honeyeaters were seen about Broome Hill and Gnowangerup in February 1916, and specimens obtained.

Cissomela nigra westralensis.

Western Black Honeyeaters were only seen on one occasion, viz. on 21 June, 1916, when I shot one out of a pair at Maud's Landing. They were very wild and restless.

Acanthorhynchus superciliosus wilsoni.

White-browed Spinebills were common in the south-west, especially about Lake Muir.

Gliciphila melanops westernensis.

Western Tawny-crowned Honeyeaters were common about Broome Hill, Gnowangerup, and some of the coastal scrubs in the south-west. They frequent open country more than heavily timbered places.

Pumella albifrons albifrons.

White-fronted Honeyeaters, like the above birds, are found in open scrubby country, and are erratic in their movements. They used to be fairly common about the Gascoyne and Point Cloates after heavy rains, but I never saw any in the south-west. They were only noticed on two occasions on my trips to the north, viz., on 14 July, 1916, when some were seen on the ranges near Point Cloates, and on 23 September, 1916, when there were a few near Carnarvon and I obtained specimens. It is a very restless and shy species.

Certhionyx variegatus.

Pied Honeyeaters were seldom seen in the Gascoyne and Minilya districts in 1911 and 1913, but were abundant in 1916, which was a good (wet) season. On 21 August, 1916, I found a nest containing three fresh eggs at Maud's Landing. It was about two feet from the ground in a small bush, and made of small twigs, roots, and grass, and lined with some soft bark or fibre. Several nests containing young birds of various sizes were seen in the few days following this date, when travelling by camel-waggon through the scrubby coast-hills between Maud's Landing and Cape Farquhar.

Stigmatops indistincta indistincta.

Least Honeyeaters were seen in most localities, but not in any numbers, from the south-west to the North-West Cape, where this species is fairly common in the scrubby gorges of the ranges.

Meliphaga virescens virescens.

Singing Honeyeaters were commonly observed in all the districts visited. Fledged young were seen at Carnarvon on 11 August, 1913, and Point Cloates on 14 July, 1916. Mr. G. M. Mathews appears to have inadvertently described *Meliphaga virescens hartogi* as a new subspecies (*vide* Bulletin B. O. C. vol. xl. 1920, p. 76). The type of the species itself was obtained on Dirk Hartog Island by the French expedition of 1818, as mentioned in 'The Ibis' (1917, p. 609), and was described by Vieillot (N. Dict. d'Hist. Nat. xiv. p. 329).

Lichenostomus cratitia occidentalis.

Wattle-cheeked Honeyeaters were very plentiful in the sand-plain scrubs east of Gnowangerup in February 1919, the only locality where any were observed.

Lichenostomus keartlandi mungi.

Western Grey-headed Honeyeaters were plentiful all along the ranges of the North-West Cape peninsula, but were not seen elsewhere. They were breeding from July to August, 1916. The song of this bird is a very sweet trilling warble, and other shorter notes are uttered.

Lichenostomus ornatus ornatus.

Western Yellow-plumed Honeyeaters were common at Lake Craigie (fifteen miles north of Perth), where specimens were obtained on 8 April, 1916.

Lichenostomus ornatus wensleydalei.

Inland Yellow-plumed Honeyeaters were very plentiful about Broome Hill, where they mostly fed in the white-gum timber. Many recently fledged young birds were seen in early February, 1916.

Ptilotula penicillata carteri.

North western White-plumed Honeyeaters were, as usual, abundant on the scrubby banks and islands of the Gascoyne River, the bushes and white-gum trees being full of the birds, with their cheerful notes and lively movements.

They were also common on the Minilya River and the Yardie Creek pools, but excepting near these pools in the North West Cape ranges, their place is taken by *Lichenostomus keartlandi*. Most of the young birds are fledged in August or early September. The notes of the birds from the Minilya northwards are different from those on the Gascoyne.

Meliornis novæhollandiæ longirostris.

Long-billed Honeyeaters were common in all south-western districts.

Meliornis niger gouldi.

Moustached Honeyeaters were only seen at Augusta, when several were feeding on the honey in *Banksia* blossoms, in company with many *M. longirostris*, and specimens were obtained on 8 April, 1919. These birds seem to be very local, and are always very restless and shy.

Myzantha flavigula lutea.

Yellow Minahs were common on the Lower Gascoyne River, and a few were seen on the Minilya and Lyndon rivers. Fledged young were noted on 9 September, 1911.

Coleia carunculata woodwardi.

Western Red Wattle-birds were common about Broome Hill and all south-western districts. In early April, 1919, thousands of them were feeding in the coastal scrub and timber near the Vasse River.

Anthochaera chrysoptera lunulata.

Little Wattle-birds were not commonly seen, except at the Vasse River, in April 1919, when many were feeding in company with *Coleia carunculata*.

Acanthogenys rufogularis flavacanthus.

Western Spiny-cheeked Honeyeaters were fairly common in the scrubs about Carnarvon, the Minilya district, and North-West Cape ranges, and a good many were seen at Woolundra in May 1919, eating the last of the grape-crop.

These birds were noticed breeding on the Lyndon River on 5 September, 1911, and at Carnarvon on 23 September, 1913. Both sexes utter the peculiar gurgling notes, and I observed that these birds north of Point Cloates have quite a different note and whistle from those of the Carnarvon district. Mr. G. M. Mathews described the Woolundra bird as *A. r. woolundra* (Bulletin B. O. C. xl. 1920, p. 76).

Anthus australis bilbali.

Western Pipits were common about Broome Hill, and in open or cleared localities through the south- and mid-west areas. They are not seen in heavy timber in its natural state, but extend their range as the country is cleared. Two small young were seen in a nest at Carnarvon on 13 August, 1911, and three fresh eggs in a nest there on 22 September, 1913. Specimens of *Anthus* obtained at Peron Peninsula and Dirk Hartog Island (both in Shark Bay) and at Carnarvon are slightly more rufous in general colouring than birds from Broome Hill. Point Cloates birds are distinctly more rufous than those at Carnarvon, and near the North-West Cape I obtained specimens that agree with Mathews' Rufous Pipit (*Anthus australis subrufus*), of which I found a nest containing three eggs, about twenty miles south of North-West Cape, on 29 July, 1916. They were very similar to those of more southern Pipits.

Mirafra horsfieldi woodwardi.

Specimens of the Onslow Bush-Lark were obtained by me at the Minilya River on 20 August, 1911. It was the first time I had seen these birds so far south. Fledged young were seen at the same place on 20 September, 1911. Several were seen at Maud's Landing, Point Cloates, and near the North-West Cape.

Zonæginthus oculatus.

Red-eared Finches were common in the Paper-Bark tree (*Melaleuca*) swamps about Albany in 1913, and I saw some at Lake Muir (which is thirty-five miles from the sea) on 1 January, 1916, and a good many at a large swamp close

to Cape Leeuwin in March 1916. Some of their nests of the previous year were examined in scrub between the swamp and the beach; they were made of fine grass and fibre, and partly domed. Boys from the lighthouse quarters said they found nests there every year. A few of these birds were seen, and specimens obtained, on 25 March, 1919, in dense scrub below Karri Forest on the Warren River.

Taniopygia castanotis wayensis.

Chestnut-eared Finches were fairly common, for a short time, about 14 October, 1911, at Broome Hill and to the east of there. It was a very dry year. A specimen was obtained by me at Lake Muir on 1 January, 1916, which is the farthest south locality where I have seen this bird. They were, as usual, abundant from Carnarvon, northwards, on all visits there. Many nests contained eggs there on 7 September, 1911, and early September 1913 and 1916. Mr. G. M. Mathews described the Dirk Hartog specimens of this species, collected by me in 1916, as *Taniopygia c. hartogi* subsp. nov. (*vide* Bulletin B. O. C. xl. 1920, p. 76).

Emblema picta coongani.

Painted Finches were seen in some numbers on parts of the North-West Cape ranges. On 27 July, 1916, I saw a flock of more than twenty in a deep gorge, and shortly afterwards, at a water-hole high up on the ranges, there were many of these birds engaged in drinking. Several specimens were obtained there on different days, but none of the birds were breeding. When I was at Carnarvon in 1913 a bird-fancier, who specialized in Finches and had a large aviary of them there, assured me that he had found occasional nests of *Emblema picta* in the vicinity.

Chlamydera maculata nova.

The first specimen of the Cape Spotted Bower-bird was obtained by me early in February 1892, and not 1902 as stated in the 'Emu,' vol. iii. p. 37, and as that record may not be familiar to the readers of 'The Ibis,' I repeat the

main facts. A distressing drought had been prevailing for two years, and I had been obliged to move all my stock, with much trouble and loss, from Point Cloates to the then virgin country on the west side of the Exmouth Gulf, only to have several hundred sheep poisoned by some unknown shrub, soon after reaching there. So I returned to the west side of the peninsula ranges with a native boy, in order to open out a "soak" or black-fellow's well, at which we had obtained enough water for our horses when driving the sheep up. The water was a few feet below the ground-surface in a dense patch of scrub, on rocky ground. The weather was intensely hot, and we found three putrid poisoned dingoes in the water-hole, so had to dig it out thoroughly before we could obtain any water to drink. It was not long before the boy smashed one of his big toes with a heavy sledge-hammer, so that he could not work, and I was picking and shovelling alone, in a very bad temper, when I heard some extraordinary chuckling noises in the scrub where the native was nursing his injured toe, so called out to him: "If you cannot work you need not make such idiotic noises"; when he replied, "That not me, that a bird." So I jumped out of the hole to see what it was, and shot it, with my only firearm at the time—a .450 Colt's revolver—as it was creeping about in the scrub. It seemed to me to tally with *Chlamydera guttata*, according to Gould's Handbook, which, as usual, I had with me, when camping out. The bird of course was badly smashed, but I sent what was left of its skin to the Melbourne Museum for identification; they informed me that only a mass of loose feathers had arrived. After I had finished making the well, where there was a splendid supply of good water, I moved most of my sheep back there; but although I was camped there for several weeks, in which time I was constantly tramping the surrounding ranges, in order to shoot kangaroo, emu, etc., for food, no more of the birds were seen: but when back at Point Cloates again in April the same year, I saw one of them in a deep rocky gorge among dense fig-trees, but did not shoot at it, hoping that

it might breed, but I saw no more of it, or any others, during the eleven years that I afterwards lived in that district.

After thirteen years' absence, I was again at the same part of the ranges where I had shot the first Bower-bird, and on 6 August, 1916, Mr. A. Campbell, who now resides there, and myself were searching some of the deep rugged gullies of the ranges, where clumps of thick scrub, and large wild fig-trees grow in patches, when a thick-set bird was seen perched in tall bushes ahead of us. I shot it, and found it to be one of the long lost Spotted Bower-birds. Then we noticed two nests, about twenty feet from the bottom of the gully, in a small tree ("Eel-bya"), and Campbell climbed up to examine them. Directly he reached them, another Bower-bird perched in the tree a few feet above his head, and I asked him to turn his face away so that I could shoot it, which I promptly did without doing him any damage. He called down to me that one nest was very old and dilapidated, and that the other one was empty; so I asked him to descend and let me climb up and examine them, while he stood below with the .410 gun. Just as I was near the nests, Mr. Campbell called out: "Another of them has just settled above *your* head, shall I shoot it?" ; and as my back was towards him, I replied, "Shoot away," and a third bird fell. As Campbell was picking it up, it uttered a harsh cry, and a fourth bird appeared in the bushes where we had seen the first, and that was also secured. The whole affair only lasted a few minutes, and we were both considerably excited. The only bird that uttered any sound was the third one, as mentioned above. Both the nests were similar in structure, being about ten inches in diameter, and made entirely of sticks, with small twigs for lining material. The nesting cavity was shallow in the better of the two, and nearly filled with birds' droppings and some fallen leaves. It had probably been used a few months previously, and I think undoubtedly, by a pair of these birds. When skinning the specimens later in the day, three were found to be females, and none of them showed any indications of breeding. They had been feeding on small round berries and leaves

off some bush. A careful search in the vicinity failed to find any bowers or playgrounds, and none were seen either in that gully, which we followed to its head, or any of the other numerous ones that were examined on that and following days.

On the 7th of August I walked out to the place where the birds had been obtained, and took photographs of it, and the tree with the two nests; but the prints obtained, and also the negatives, were lost with the bulk of my luggage on the s.s. 'Medina,' when she was torpedoed in the English Channel in April 1917. I then again searched all the likely gullies in the vicinity, but only saw one Bower-bird, that was shot when feeding in a clump of fig-trees. I was out again the next day, but tramped many miles on the rugged ranges without any results, except seeing a single Bower-bird fly from a clump of fig-trees some distance from me.

On the 9th of August Mr. Campbell drove me some miles in order to search fresh ground, and after examining several likely-looking places, the female bird that was figured (Ibis, 1920, pl. xiv.) was obtained. Two others were seen to fly from a large mass of fig-trees, near where we were having our lunch, and a single bird from other fig-trees, when returning in the afternoon. Apparently these birds feed largely on wild figs. Their flight is straight, with rapid strokes of the wings, and resembles that of Magpies (*Gymnorhina*); they look large when flying. Whitlock, in his paper "On the East Murchison," Emu, vol. ix. p. 218, says of *Chlamydera m. subguttata* that the nuchal band is much smaller in the female bird than in the male. This is certainly not always the case with *C. m. nova*. The nuchal bands of all the birds obtained by me are mostly of a vivid pink colour, but they all contain a few bluish-purple feathers scattered in with the pink ones. I also noticed that the markings which appear to be black on the edges of the tawny spots on the crown of the head, show a distinct green when held at a certain angle. The North-West Cape is about 480 miles north-west of the locality where Mr. Whitlock obtained his birds.

It is curious that my old natives at the North-West Cape told me that the Bower-birds were strange to them, and they had no aboriginal name for them; but a native who came from the Ashburton district told me that he had seen similar birds to the north of that river, and far inland. A white man to whom I showed the specimens, asking him if he had ever seen any like them, at once replied that he had seen the same or similar birds at a locality that corresponded with the one described by the native, viz. about 180 miles east of the Cape.

Through some mistake, the letterpress accompanying the plate of this fine new subspecies ('Ibis,' 1920, p. 499) is headed "On a new *species* of Bower-bird."

Corvus coronoides perplexus.

Southern Ravens were common in all south-western districts, and were seen near the mouth of the Warren River. Some were also seen at Broome Hill on 14 February, 1919, where Ravens seldom occur.

Corvus bennetti bonhoti.

Western Small-billed Crows were common about the Gascoyne and Minilya districts. A breeding female was shot at Carnarvon on 9 August, 1911. It had the bill and inside of mouth black; irides with a bright blue centre, and white around it. A male obtained at the Minilya River, 19 August, 1911, had the bill and mouth black; irides hazel.

Corvus cecilæ cecilæ.

Northern Crows were also common in the above districts, and I cannot say which bird is the most abundant, but probably *C. c. cecilæ*, and the following notes may be taken as applying to this species:—5-9 September, 1911. Many young, of large size, in nests at the Lyndon and Minilya rivers, and one nest containing eggs. 17 September, 1913. Many young birds in nests at Minilya. 22 July, 1916. Took seven eggs, incubated, and of a pale blue colour without markings, from a nest ten feet from the ground in a stunted tree at Yardie Creek. 9 July, 1916. Shot a male at Point

Cloates, apparently not breeding. 16 September, 1916. Shot a fledgling that had just left the nest, and could not fly much: the irides were bright pale blue.

A bird, shot at the Yardie Creek on 4 August, 1916, had been feeding largely on caterpillars and salt-bush berries. Crows were a nuisance at my lonely camp at the Yardie that year, turning all sorts of things over when I was away from it. I had shot two specimens of Rock Wallaby (*Petrogale lateralis*) for food, and pegged out the skins on the ground, but the Crows damaged them; so next time I left the camp I buried the skins, laid flat, some inches deep in the sand, but on my return found that the Crows had pulled them up. On 9 September, 1913, I shot one of a pair of Crows, for identification, at Carnarvon, and was carrying it by its feet, when the other bird followed me for about a mile, cawing and flying close round me. It was presumably a female, as the one shot was a male.

Corvus cecilæ hartogi.

My notes on the Dirk Hartog Crow were published in 'The Ibis,' October 1917, p. 610. It has since been described as *Corvus hartogi* in the Bulletin B. O. C. vol. xl. p. 76, 30 January, 1920.

Neostrepera versicolor plumbea.

Leaden Crow-Shrikes were common all through the southwestern area. Their northern limit seems to be about the Murchison River.

Corrections.

Referring to my paragraph in 'The Ibis,' July 1920, bottom of page 693, re *Chlidonias leucoptera*: as no specimens were obtained of this "White-winged Tern" I deleted it from the proof-sheets, which were received by me at a very late date, and apparently too late to make the required omission, which I regret.

On page 709 of the same paper, in the fourteenth line from the bottom, for "length" read "height."

Daption capensis.

Since I recorded the appearance of Cape Pigeons on the Western Australian coast, in the first part of this paper ('Ibis,' 1920, p. 693), a specimen of this bird has been obtained at Cottesloe, near Fremantle, in August this year (1920), and is now in the Perth (W. Australia) Museum, together with other rare species obtained during the winter gales. I first read the records in a cutting from the 'West Australian' newspaper, sent me by a friend, and by last mail have had them confirmed in a letter from Mr. Glauert of the Perth Museum.

IV.—*Remarks on rare and otherwise interesting Birds contained in Collections made by Mr. G. L. Bates in Southern Cameroon.* By DAVID A. BANNERMAN, M.B.E., B.A., M.B.O.U.*

THE birds here referred to were collected by Mr. G. L. Bates in the southern part of Cameroon, for the most part on the River Ja, but a number were secured on the Rivers Bumba and Nyong (*vide* map, *Ibis*, 1908, pl. xi.).

Two distinct collections are represented: the first was sent to the British Museum before the war in 1911, and on these birds Mr. Bates has already published his interesting notes (*Ibis*, 1911, pp. 479-545 & 581-631).

The second collection was received by us in 1915, and these birds Mr. Bates has now generously presented to the National Collection. The period during which these two collections were made extends over a number of years:—

Collection 1, from 1908-1911.

Collection 2, from 1912-1915.

In the following pages I have dealt only with the non-Passerine Birds. Mr. Ogilvie-Grant has already published some notes on the rarer Passerine birds which Mr. Bates sent

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home in these two collections; his remarks will be found in 'The Ibis,' 1917, pp. 72-90. I thoroughly agree with Mr. Ogilvie-Grant's plan in not giving a complete account of these collections. It is quite unnecessary, and indeed a waste of time and space, to enumerate all the species which were obtained; the constant repetition of notes and observations on the same species over and over again in the pages of 'The Ibis' is strongly to be deprecated, and serves no useful purpose whatever. I therefore gladly follow Mr. Ogilvie-Grant's example, and have only mentioned those birds about which there is something of real interest to say which to the best of my knowledge has not been said before.

Thanks to Mr. Bates, the British Museum is now very rich in material from southern Cameroon, and to my mind the time has come when the knowledge which has been gained from the study by various museum authorities of Mr. Bates's magnificent collections should be collated in book form. As Mr. Ogilvie-Grant has truly remarked, from 1902 onwards papers on Mr. Bates's collections have followed one another in a constant stream from the pen of the late Dr. Bowdler Sharpe or Mr. Ogilvie-Grant, and last, but not least, we have several extremely able papers contributed to 'The Ibis' by Mr. Bates himself.

The following are the references to papers describing Mr. Bates's collections from Cameroon:—

- "On a small collection of Birds from Efulen in Cameroon." Sharpe, Ibis, 1902, pp. 89-96.
- "On further collections of Birds from the Efulen District of Cameroon." Sharpe, Ibis, 1904, Part I. pp. 88-106; Part II. pp. 591-638.
- "Field-Notes on the Birds of Efulen in the West-African colony of Kamerun." Bates, Ibis, 1905, pp. 89-98.
- "On further collections of Birds from the Efulen District of Cameroon." Sharpe, Ibis, 1905, pp. 461-476; Sharpe, Ibis, 1907, pp. 416-464; Sharpe, Ibis, 1908, pp. 117-129; Sharpe, Ibis, 1908, pp. 317-357.
- "Observations regarding the Breeding Seasons of the Birds in Southern Kamerun." Bates, Ibis, 1908, pp. 558-570.
- "Field-Notes on the Birds of Southern Kamerun, West Africa." Bates, Ibis, 1909, pp. 1-74.

"Further Notes on the Birds of Southern Cameroon" (with descriptions of the Eggs by W. R. Ogilvie-Grant). Part I., Bates, Ibis, 1911, pp. 479-545; Part II., Bates, Ibis, 1911, pp. 581-631.

Letter, describing a trip to the Nyong River. Bates, Ibis, 1914, pp. 169-172.

"Some facts bearing on the affinities of *Smithornis*." Bates, Ibis, 1914, pp. 495-502.

"Remarks on some recent Collections of Birds made by Mr. G. L. Bates in Cameroon." Ogilvie-Grant, Ibis, 1917, pp. 72-90.

***Dendropicus lafresnayi camerunensis*.**

Dendropicus camerunensis Sharpe, Ibis, 1907, p. 443—
Type locality: R. Ja, Cameroon.

Dendropicus lafresnayi Malh.; Sharpe, Ibis, 1904, p. 620; Bates, Ibis, 1909, p. 21.

Mr. Claude Grant (Ibis, 1915, p. 461) pointed out that the type of *D. lafresnayi* Malh. came from Gaboon, and until we had a series of typical birds from the Gaboon River it would be impossible to say whether the Congo or the Cameroon bird would be true *D. l. lafresnayi*. I do not agree with this decision.

The type of *D. camerunensis* Sharpe (Ibis, 1907, p. 443) was described from the River Ja, Cameroon, and as pointed out in the original description, has the ground-colour of the upper parts darker than birds from the Congo. This is acknowledged by Mr. Claude Grant. As typical *D. lafresnayi* was described from Gaboon, Congo birds are much more likely to be similar to Gaboon specimens than to Cameroon highland birds. I think we can therefore safely consider *D. l. camerunensis* a well-defined race. Mr. Ogilvie-Grant agrees with these conclusions. I am aware that this is the opposite opinion to that expressed by me in 'The Ibis,' 1915, pp. 490 & 647. I then believed that the type locality of *D. l. lafresnayi* was (as given in Rev. et Mag. Zool. 1849, p. 533) "? Africa," and I compared my specimens from Cameroon Mountain and the Manenguba Mountains with birds from southern Cameroon and could not distinguish them. I now unite all Cameroon birds from both the north and the south under Sharpe's name, and restrict the typical birds to Gaboon and the Belgian Congo.

Mr. Bates has now obtained six more specimens of this species from Bitye, River Ja.

Mesopicus xantholophus Hargitt.

Mesopicus elliotti Cassin.

Dendromus caroli (Malh.).

Dendromus permistus Reichw.

Dendropicus gabonensis (Verr.).

Mr. Bates has sent further specimens of all these Woodpeckers from Bitye.

Iynx torquilla torquilla.

Iynx torquilla Linn. Syst. Nat. 10th ed. 1758, p. 112—Type locality: Sweden.

I record a specimen shot by Mr. Bates at Bitye, River Ja, on the 19th of November, 1913, as we have far too little data of European migrants in West Africa. It is unfortunate that collectors who must often have the opportunity of procuring European birds on passage entirely ignore these in favour of local species whose range is often much better known. It is a fact that several European birds pass regularly through the Canary Islands in spring and autumn, which have never been taken in Africa south of that latitude.

Indicator conirostris conirostris *.

Melignomys conirostris Cassin, Proc. Acad. Philad. 1856, p. 156—Type locality: Moonda, Gaboon.

Indicator c. conirostris C. Grant, Ibis, 1915, p. 434; Bannerman, t. c. p. 489 [Cameroon Mt.].

All the examples of this species, eight in number, have been procured by Mr. Bates on the River Ja. He has now forwarded another pair from the same locality.

The wings in seven males measure 88–92 mm.; in three females, 79, 85, 85 mm.

The two specimens from the Gold Coast and Fantee, mentioned under *I. conirostris* in the Catalogue of Birds in the

* The notes on the species of the genera *Indicator*, *Melignomon*, and *Prodotiscus* were written by Mr. W. R. Ogilvie-Grant in 1917.

British Museum (Vol. xix. p. 10), were separated by Sharpe as *I. ussheri* (cf. C. Grant, t. c. p. 434).

Indicator maculatus.

Indicator maculatus Gray, Gen. Birds, ii. 1847, p. 451—Type locality: not stated, [River Gambia] cf. specimen in Brit. Mus. Coll.; Sharpe, Ibis, 1907, p. 440.

We have received another adult male of this rare species, shot at Bitye on 2 June, 1910. It agrees entirely with the male example procured in July 1905 and also with the type specimen from the River Gambia. It has the feathers of the fore-part of the crown partially edged on the sides with yellowish-white, a character found in all the specimens and showing an approach to *I. variegatus*. It is easily distinguished from that species and from *I. stictithorax* by having the feathers of the breast and upper belly dull olive spotted with yellowish-white, but the spots are less regular than those of the chest. Two specimens, male and female, collected by the late Dr. Ansorge at Guinal, Portuguese Guinea, appear to be immature examples of this species.

Indicator exilis exilis.

Melignotheres exilis Cassin, Proc. Acad. Philad. 1856, p. 157—Type locality: Moonda River, Gaboon.

Indicator e. exilis C. Grant, Ibis, 1915, p. 434.

Mr. Bates has sent three more pairs of this species, all referable to the typical form from Gaboon.

The wings in three males measure respectively 70, 71, 72 mm.; in three females 67 mm.

Mr. Claude Grant (Ibis, 1915, p. 434) has stated that "the male differs from the female in having a well-defined white band at the base of the upper mandible and a black moustachial streak"; but in three specimens in the collection marked in this way the sex has been ascertained as *female* by Mr. Bates, Mr. Dent, and Dr. Ansorge respectively, three most reliable collectors.

Indicator stictithorax.

Indicator stictithorax Reichw. J. f. O. 1877, p. 110—Type locality: Cameroon; Sharpe, Ibis, 1907, p. 440.

Indicator theresæ Alexander, Bull. B.O.C. xxi. 1908, p. 90 [Gudima, River Iri].

Mr. Bates has sent another example of this species, an adult female from Bitye, River Ja. He had already procured three specimens at Kribi, of which two males taken in September are in the British Museum. The uniform dark olive crown, spotted breast, and streaked belly serve to distinguish this species from the nearly allied *I. maculatus* Gray.

I. theresæ Alexander, the type specimen of which from Gudima, River Iri, is in the British Museum, is synonymous with the present species. The type specimen has been marked a male by Alexander, but it seems certain from the small size of the bill that it must be a female: it agrees exactly with the female from Bitye sent by Mr. Bates.

Melignomon zenkeri Reichw.

Melignomon zenkeri Reichw. Vög. Afr. ii. 1902, p. 113—Type locality: Yaunde, Cameroon.

Mr. Bates, who had previously sent a single male of this rare species, has now obtained five more, including examples of both sexes.

Ceriocleptes robustus.

Melignomon robustus Bates, Bull. B.O.C. xxv. 1909, p. 26—Type locality: Bitye, River Ja, Cameroon.

Ceriocleptes xenurus Chapin, Bull. Am. Mus. N. H. xxxiv. 1915, p. 512 — Type locality: Avakubi, Ituri District.

The Honey-guide described and figured by Mr. Chapin is obviously of the same species as that described by Mr. Bates under the name *Melignomon robustus*. Mr. Bates obtained a second female example at the same place, Bitye, River Ja, on the 29th of September, 1913. The type specimen of *M. robustus* shows the peculiarity of the tail-feathers figured by Mr. Chapin and mentioned by Mr. Bates when he modified the diagnosis of the genus *Melignomon* (*op. cit.* p. 27). Mr. Ogilvie-Grant did not accept the genus

Cerioleptes proposed by Mr. Chapin, but I consider that it must be kept up.

If Reichenow's genus *Melichneutes* (Orn. Monatsb. 1910, p. 160), founded on *M. sommerfeldi*, is, as I suspect, identical with Chapin's genus *Cerioleptes*, then Reichenow's name will take precedence.

***Prodotiscus insignis*.**

Heterodes insignis Cassin, Proc. Acad. Philad. 1856, p. 157—Type locality: Moonda River, Gaboon.

? *Prodotiscus emini* Shelley, P. Z. S. 1888, p. 43 [Bellima].

Two adult female examples procured by Mr. Bates at Bitye, River Ja, should be typical examples of *Heterodes insignis* Cassin, described from the Moonda River, Gaboon. It seems more than probable that the type specimen of *P. emini* Shelley (which came from Bellima in the Tingasi District and not from Wadelai as stated in the original description, cf. P. Z. S. 1888, p. 43) is a male of the present species. In the British Museum collection there is a female example from Nairobi, presented by Mr. A. B. Percival, which nearly resembles one of the adult females sent by Mr. Bates. He also sent a quite young female with the quills half-grown from the same locality. It would seem that the species ranges from the Lake District to West Africa, but our very small series does not afford sufficient evidence to determine this.

***Cuculus gabonensis gabonensis*.**

Cuculus gabonensis Lafresnaye, Rev. et Mag. Zool. 1853, p. 60—Type locality: Gaboon; Sharpe, Ibis, 1907, p. 436; Bates, Ibis, 1911, p. 500.

The valuable material now sent home by Mr. Bates, together with his notes on this species published in 'The Ibis' for 1911, throw considerable light on the complex plumage changes which the Gaboon Cuckoo undergoes between the stage of nestling and adult. Mr. Bates has already pointed this out, but his remarks are of such value that I wish to emphasise them again.

Messrs. Sclater and Mackworth-Praed have recently

worked through what they term the *solitarius* group of Cuckoos in the British Museum, and published their conclusions on pp. 642, 643 of 'The Ibis,' 1919. They remark (*l. c.* p. 643) : "The relationship of the *solitarius* group with *C. clamosus*, the Black Cuckoo, which is also found all over Africa, is very obscure, as is also the relationship of *C. solitarius* and *C. gabonensis*. There appears to be a series of intermediate forms (which has been called *C. jacksoni*) between *C. clamosus* and *C. solitarius*. There is also a series of intermediate forms (called *C. mabiræ*) between *C. gabonensis* and *C. solitarius*. It is possible that these may be regarded either as three separate species intergrading in certain areas, or as three species in process of evolution from one form within those areas." I am not at all in agreement with these conclusions, believing *C. solitarius* to be a perfectly fixed race with very distinct young.

Cuculus gabonensis I believe to be also a fixed race with distinct young, having a subspecies *Cuculus gabonensis mabiræ*. I shall deal with the status of *C. clamosus* and *C. jacksoni* later.

I have now the entire fine series of these forms contained in the British Museum spread out before me in addition to certain specimens kindly lent to me, from Tring by Lord Rothschild and by Dr. van Someren from his private collection.

CUCULUS GABONENSIS GABONENSIS

To deal first with *Cuculus gabonensis gabonensis* : we possess fourteen examples in the British Museum showing the complete change of plumage as explained by Mr. Bates (Ibis, 1911, p. 501).

1. The first plumage is uniform black throughout (specimens Nos. 3898 and 3904).
2. The second is the transitional stage, some of the barred feathers of the underparts and some of the barred chestnut feathers of the throat are appearing amongst the black feathers ; the glossy feathers are appearing

on the back (specimens Nos. 3044, 3141, and the bird obtained by Bates at Efulen, B. M. Reg. No. 1903. 7.16.30, erroneously named *C. clamosus* by Sharpe in 'The Ibis' (1904, p. 614).

3. The third represents the almost adult stage; the underparts have lost all trace of the black feathers except on the thighs, the breast is creamy-buff barred with black and the chin and throat chestnut barred with black. The upper parts are glossy throughout (specimens Nos. 4411, 3616, 4091, and 951 [Bates Cameroon coll.], No. 14, *ex* Shelley coll. from Landana, and specimen 1919.10.12.46, Poko, Uele, Dr. C. Christy coll.).
4. In the fourth we see the fully adult bird which has lost all trace of barring on the throat, which is now uniform chestnut (specimens No. 4291 [Bates coll.]; No. 805, Landana [Shelley coll.]; and two birds collected in Gaboon, Danger R. [Ansell], "Gaboon" [Verreaux]). The ground-colour of the breast is creamy-buff, and the under tail-coverts are uniform buff, with little trace of barring.

The range of *C. g. gabonensis* appears to be from Cameroon, through Gaboon south to Landana just north of the mouth of the Congo River, and eastward to the northern Belgian Congo, Uele River district.

CUCULUS SOLITARIUS.

[*Cuculus solitarius* Stephens in Shaw's Gen. Zool. ix. 1815, p. 84—Type locality: Caffraria (*i. e.* Eastern Cape Colony) *ex* Levaillant.]

Next we will deal with *Cuculus solitarius*, another Cuckoo which ranges throughout Africa and occurs in Cameroon. Mr. Bates's last collection contains very young birds of this species, which shows that it should never be confused with *C. gabonensis*. In the British Museum we have a large series of this bird:—89 in adult plumage and 14 in

juvenile and immature plumage, besides a number sent to me by Dr. van Someren.

1. The first plumage of *C. solitarius* has the upper parts black (as in *C. gabonensis*), but each feather of the head, mantle, back, rump, and wing-coverts is narrowly fringed with white or buffish-white, most pronounced on the head and nape. There is a conspicuous white spot at the base of the head. The throat and chin are black, each feather narrowly margined with white; the breast and belly buff, strongly barred with black.
2. In the second stage the white margins to the feathers are less conspicuous; the breast and belly are white strongly barred with black, the under tail-coverts are white barred with black. On the upper surface the white spot at the base of the head is wider and more conspicuous, the rectrices are black, and the four white spots on the webs of the rectrices (including the central pair) have made their appearance—the latter an important character, as *C. solitarius* is the only Cuckoo of this complex group which has white markings on the webs of the central pair of tail-feathers. The white spot at the base of the head disappears entirely before the feathers of the upper parts lose their white edges.
3. Stage number three is very similar to the last, but the chestnut feathers of the throat are beginning to make their appearance, and the underparts are rather more buff and are more conspicuously barred. The head and rest of the upper parts are uniform, the white margins to the feathers having entirely disappeared.
4. The fourth stage shows the grey feathers of the throat appearing above the chestnut of the breast; the under tail-coverts are now distinctly buff, with a few indistinct bars.
5. In the fifth stage we see the adult bird with uniform dark grey upper parts, the conspicuous white markings on the webs of the rectrices including the middle pair;

pure light grey throat merging into chestnut on the breast; buff underparts uniformly banded with black; uniform buff under tail-coverts sometimes bearing a few dark spots or irregular bars, but more often entirely wanting in this respect.

The range of this Cuckoo seems to be Africa generally. In the British Museum we have specimens from:

South Africa (Cape Colony, Transvaal, Natal, Zululand).

East Africa (Portuguese E. Africa, British E. Africa, Abyssinia).

North-Central Africa (Sudan, Niam-Niam country, and north Belgian Congo).

West Africa (Portuguese Guinea, Gold Coast, Cameroon, Congo River, Angola).

CUCULUS CLAMOSUS and CUCULUS JACKSONI.

Thanks to Lord Rothschild, Sir Frederick Jackson, and Dr. van Someren, who have most kindly lent me all their specimens for comparison with the large series in the Natural History Museum, I have had ninety examples of *Cuculus clamosus* and *Cuculus jacksoni* from which to make my deductions, *i. e.* :—

- | | | |
|---------|---|---|
| Div. 1. | { | 48 birds from Uganda, Brit. E. Africa, Equat.
Great Lakes, S.E. Ethiopia, S. Abyssinia.
12 birds from the Gold Coast, Sierra Leone,
N. Angola. |
| Div. 2. | { | 10 birds from Nyasaland.
20 birds from Cape Colony, Natal, Zambesi,
Bechuanaland, Damaraland, Transvaal, South
Rhodesia. |

Unquestionably all birds in Division 2 are examples of *Cuculus clamosus*; and before we discuss examples from localities in Division 1, I wish to deal with the status and plumage of the South African Black Cuckoo.

CUCULUS CLAMOSUS.

[*Cuculus clamosus* Latham, Ind. Orn. ii. Suppl. 1801, p. xxx—Type locality : Cape of Good Hope.]

The South African Black Cuckoo is unfortunately not very well represented in the National Collection, as we have not any really young birds. We have twenty specimens from Cape Colony, Damaraland, Transvaal, Natal, Zambesi, and Southern Rhodesia ; also ten specimens from Nyasaland, which I consider must be included with the typical form.

The juvenile and second plumage is apparently unknown, but we have a number of specimens showing the transition stage from the plumage just before the adult plumage is reached to the fully adult. In this not quite mature phase, of which we have twelve examples, the upper parts are already black, with a deep greenish-blue gloss as in adult specimens. The underparts, in what I take to be the three youngest examples before me (Reg. Nos. 89.6.25.112 and 89.6.25.113), two from Durban, one from Kingwilliamstown, are dusky blackish-brown, irregularly barred and in one specimen almost mottled (so indistinct is the barring) with grey and rufous. The under tail-coverts are black, barred distinctly but narrowly with pale rufous and white. The Kingwilliamstown bird is probably the youngest example, as it has the outer webs of the primaries distinctly barred, while in the elder of the Durban birds the primaries are uniform as in the adult.

From this plumage the birds gradually lose the barring on the underside ; in several specimens it is only faintly indicated, and finally all trace of markings are lost and we see the adult plumage as in a specimen (No. 8994) from Durban and a bird from Natal (No. 79.4.5.395).

In one bird with almost uniform underparts but very heavily barred under tail-coverts there is a distinct indication of rufous on the breast.

I have purposely described specimens from South Africa (Natal and Cape Colony) as being undoubtedly typical, but

exactly the same changes of plumage are apparent in the ten birds from Nyasaland.

In dealing with examples of the Black Cuckoo from north-east and north-west Africa the problem is considerably complicated by the occurrence in Uganda, British East Africa, southern Abyssinia, and northern Angola of the bird known as *Cuculus jacksoni* Sharpe, immature examples of *Cuculus clamosus* having been confused by many workers with the young of *C. jacksoni*. Unfortunately both forms occur side by side in many districts—even in the same forests; and the very variable plumage exhibited by immature birds of *C. clamosus* has made the status of the two forms and the range which they occupy a difficult task to unravel.

From northern central Africa we have examples of the true Black Cuckoo from Uganda, British East Africa, southern Abyssinia, eastern Belgian Congo, the Galla country, Niam-Niam country, northern Angola, Gold Coast, and Sierra Leone. The adult black birds are indistinguishable from those from South Africa, and the immature specimens exhibit the same remarkable variety in the colour of the plumage—from the indistinctly barred birds with an indication of rufous appearing amongst the feathers of the breast to a curious grey bird in the collection of Sir Frederick Jackson.

CUCULUS JACKSONI.

[*Cuculus jacksoni* Sharpe, Bull. B. O. C. xiii. 1902, p. 7—
Type locality: Toro, Uganda.]

At first glance typical examples of *C. jacksoni* look like a very distinct Cuckoo, but the type is not quite adult. The upper parts are glossy blue-black as in *C. clamosus*, but the underparts are very dissimilar to any phase of plumage exhibited by South African specimens in the National Collection, and resemble much more nearly *C. g. gabonensis*. The breast is dark chestnut, the throat greyish, and the rest of the underside, from the chest to and including the under tail-coverts, is strikingly banded with black

and white. I have examples in this phase of plumage from Uganda, Brit. E. Africa, and S. Abyssinia, and from all these places black birds indistinguishable from adult *C. clamosus* from South Africa.

This led me to suppose that *C. clamosus* and *C. jacksoni* were very closely allied. As they appear to inhabit the same country, it is impossible to determine which immature birds are the young of *C. jacksoni*. Certainly the series of immature birds from Uganda resemble the immature specimens of *C. clamosus* from Natal and the rest of South Africa.

Until young birds are obtained of both forms we cannot definitely say more. The only fully-adult specimen of *C. jacksoni* in the British Museum is No. 1920.6.7.15, shot at Mpumu, Uganda, by Mr. L. M. Seth-Smith. It is distinguished from *C. gabonensis* by the more heavily barred under surface, the ground-colour of which is white and not cream, and by the uniformly banded under tail-coverts.

In other respects the adult bird of *C. jacksoni* resembles adult *C. gabonensis*, and had it not inhabited the same country as *C. g. mabiræ*, I believe the simplest plan would have been to include it as another subspecies of *C. gabonensis*. As it is, it must remain as a species.

Range. We have specimens of *C. jacksoni* in typical heavily barred plumage from southern Abyssinia, Bahr el Ghazâl, British East Africa, Uganda, and northern Angola.

CUCULUS GABONENSIS MABIRÆ.

[*Cuculus mabiræ* van Someren, Bull. B. O. C. xxxv. 1915, p. 116—Type locality : Mabira and Kasala Forests, Uganda.]

This bird I consider a subspecies of *Cuculus gabonensis*. Dr. van Someren has kindly forwarded me two birds for examination, and Dr. Hartert has sent me the type and another from Tring. The adult bird has glossy blue-black upper parts, pale chestnut throat and breast, and either uniform buffish-white or slightly barred underparts and uniform buff under tail-coverts. The immature of this bird is quite distinct : the chestnut of the breast extends to the

throat and chin and is barred with black; the underparts are almost white, barred with black—giving the birds a much lighter appearance than *C. jacksoni*, with which it might at first sight have been confused.

I have one remarkable bird entirely black, but with several barred feathers still remaining in the breast and flanks—the barred feathers are *fresh* feathers, the black much worn, showing that the bird is changing from black plumage (?) of the young into the barred plumage. It is impossible to determine whether it is a young *jacksoni* or *mabiræ*. I am inclined to think the latter, as the feathers of the young of *gabonensis* are entirely black and in the adult become barred. This I believe to be a parallel case, but it is worthy of study by anyone working at this group. The specimen alluded to is a male obtained by Mr. L. M. Seth-Smith at Mpumu, Uganda, on the 28th of July, 1912, Brit. Mus. Reg. No. 1913.7.16.31.

At first I believed that this was *C. jacksoni* turning into a black bird, but on closer examination along with Mr. H. F. Witherby of the feathers, he drew my attention to the fact that the barred feathers were new, the black feathers old, and in these conclusions I agree. The young of either *C. jacksoni* or *C. mabiræ* are therefore black. It is not an example of *C. clamosus*.

The range of this Cuckoo is not yet known apparently. The type came from the Kasala Forest and the other specimens from Mabira and Bugoma in Uganda. There are three birds in the Jackson collection from the Mabira and Bugoma Forests. The subspecies is not represented in the British Museum.

***Pachycoccyx validus*.**

Cuculus validus Reichw. Orn. Centralbl. 1879, p. 139—
Type locality: Muniuni, Tana River, British East Africa.

Pachycoccyx validus Sharpe, Ibis, 1907, p. 435; Bates, Ibis, 1911, p. 499.

Two specimens of this rare Cuckoo were obtained (Nos. 5939 and 4220), and have been presented to the British

Museum. There are now three birds in the collection obtained by Mr. Bates on the River Ja. No. 4220 has already been recorded by Mr. Bates (*l. c.*). It has a remarkably mottled appearance, due to the feathers of the crown, mantle, greater and lesser coverts, primaries and secondaries, upper tail-coverts and tail being broadly tipped with white. The adult bird is uniformly coloured blackish brown on the entire upper parts. As Mr. Bates has already remarked, the bird, though in such spotted plumage, is not very young—the wing measures 220 mm.—and had evidently itself caught the numerous insects which were contained in its stomach.

Pachycoccyx validus ranges from British East Africa south to Nyasaland, across the Belgian Congo to Cameroen, Gaboon, and northern Angola. It has also been obtained in two widely separated localities in the late German Togoland according to Reichenow.

Chrysococcyx flavigularis.

Chrysococcyx flavigularis Shelley, P. Z. S. 1879, p. 679, pl. 50—Type locality: Gold Coast; Sharpe, Ibis, 1907, p. 437; Bates, Ibis, 1911, p. 502.

Mr. Bates's collection contains four more examples of this extremely rare Golden Cuckoo, all obtained during the month of December in 1908, 1913, and 1914. Two are females, but the sex of the other two has been ascertained as males. In plumage they closely resemble the female, and must therefore be young birds, as the adult male is a very distinct-looking bird. There is no indication of the yellow throat in either specimen, the entire under surface being narrowly barred as in the female.

Cercococcyx mechowii wellsi.

Cercococcyx mechowii wellsi Bannerman, Bull. B. O. C. xl. 1919, p. 7—Type locality: River Ja, Cameroen.

Cercococcyx mechowii Sharpe, Ibis, 1907, p. 436; Bates, Ibis, 1909, p. 15.

This race of Mechow's Cuckoo has been named by me in

honour of Mr. Wells, of the bird-room, British Museum, who first drew my attention to the differences between the Cameroon and Angola birds. We have in the British Museum collection a good series of birds from Uganda, the Belgian Congo, Cameroon, northern Angola, the Gold Coast, and a single bird from Nyasaland. When these birds are laid out in geographical order, it is at once apparent that two forms are represented, but the distribution of the two is at first puzzling.

To begin with, Cabanis (J. f. O. 1882, p. 230) described *Cercococcyx mechow* from Angola from a specimen obtained by Major von Mechow. No particulars are given as to the exact place where Mechow obtained his type, but I have ascertained that this German traveller made an expedition into northern Angola and published a large-scale map (Karte der Kuango-Expedition) in 1884 at Berlin. A copy of this may be seen in the map-room of the Royal Geographical Society. Von Mechow appears to have ascended the Kuansa River and prepared the sheets of his map from Dondo to Malange, where he left the Kuansa River and trekked northwards, joining the headwaters of the Cambo River. This river he followed to Tembo-Aluma, where the Cambo joins the Zaida-Kuango. Thence he proceeded by way of the Kuango to Camalamba. No connected account of his journey seems to have been published. We have six birds in the British Museum from northern Angola collected by the late Dr. Ansorge at N'dalo Tando (a place situated on the line between St. Paul de Loando and Kassandje), and these are very different from specimens collected in Cameroon and in Uganda.

Unfortunately the original description by Cabanis of *C. mechow* does not accurately fit either the Angola or the Cameroon and Uganda birds; but as the genus *Cercococcyx* was founded on Mechow's specimen obtained in Angola, we must restrict *Cercococcyx mechow mechow* to Angola specimens.

These Angola birds, *C. m. mechow* Cabanis, have the upper parts greyish brown, strongly washed with copper-

colour, the coppery gloss being very apparent in certain lights. The underparts are buffish white, the throat, breast, and flanks narrowly banded with blackish, each feather having a narrow subterminal bar. On the belly the bars are either entirely wanting or only faintly indicated. The under tail-coverts are barred in four out of six specimens to a lesser or greater extent.

These birds from Angola have only recently been incorporated in the National Collection, and hence former workers have been unable to compare birds from other parts of Africa with typical specimens. Had they been able to do so, they would have seen that a very noticeable difference exists between them.

We have in the British Museum twenty-one skins from other parts of Africa—13 birds from Cameroon collected by Mr. Bates (6 in old collections, 7 in the present series), 4 from Uganda and Ruwenzori, 3 from the Gold Coast, and one from Nyasaland. I have also examined one bird from Poko on the Uelle River (Christy coll.).

First, to deal with the series from Cameroon, Uganda, and Ruwenzori, which I have named *C. m. wellsi*:—These birds differ from *C. m. mehowi* in having the upper parts slate-brown, a distinct dark bluish grey taking the place of the copper colour. The most noticeable difference is, however, on the under surface, which in *C. m. wellsi* is whitish or buffish white, closely banded with brownish black, the bars much wider and closer together than in *C. m. mehowi*. The under tail-coverts are generally unbarred or unspotted, but this, as in the Angola bird, is subject to variation.

We have still to deal with birds from the Gold Coast, of which I have only three specimens; and these, while exhibiting the coppery gloss of *C. m. mehowi*, which they resemble on the upper parts, have the under surface closely barred (though not quite so heavily) as in *C. m. wellsi*. With such small material I can only point out the somewhat intermediate position which the Gold Coast birds seem to hold.

There remains the bird from Nyasaland. It is quite a young female, the upper parts barred with rufous and brown

and the underparts heavily banded. The species to which it belongs may very possibly be new, but, without adult examples, must remain indeterminable. We must, however, recognise

1. *CERCOCOCCYX MECHOWI MECHOWI* Cabanis : restricted to Angola ;
2. *CERCOCOCCYX MECHOWI WELLSI* Bannerman : Cameroon (typical), Belgian Congo, Uganda, Ruwenzori ; and perhaps
3. *CERCOCOCCYX MECHOWI* ? subsp. : Gold Coast ;
4. *CERCOCOCCYX*, sp. or subsp. indeterminable : S. Angoniland, Nyasaland ;
5. *CERCOCOCCYX MECHOWI OLIVINUS* Sassi, which I have not seen.

Caprimulgus europæus europæus.

Caprimulgus europæus Linn. Syst. Nat. 10th ed. 1758, p. 193—Type locality : Sweden.

I mention a bird of this species which Mr. Bates shot on the 8th of December, 1913, as there are far too few references to European migrants in ornithological literature to allow us to omit to record any really authentic specimen.

Caprimulgus inornatus.

Caprimulgus inornatus Henglin, Orn. Nordost-Afrika's, i. 1869, p. 129—Type locality : Bogosland.

No. 3422. ♀. Bitye, River Ja, 13 February, 1909.

No. 5168. ♂. Bitye, River Ja, 14 December, 1912.

Specimen No. 3422 has already been recorded by Mr. Bates (*Ibis*, 1911, p. 516) as *Macrodipteryx macrodipterus*, but I do not think there can be any question but that Mr. Bates has identified his bird wrongly. Without a large series for comparison it would have been impossible to name this Nightjar, which, as has already been pointed out, is not fully grown. Curiously enough, another example of this Nightjar, which has never previously been taken in Cameroon, was secured by Mr. Bates in 1912. In this bird the head, scapulars, and upper tail-coverts are strongly

marked with pinkish. In the series in the British Museum of forty specimens several are in the entire reddish phase out of which specimen No. 5168 is passing.

The range of *C. inornatus* seems to be very peculiar if all the skins in the National Collection have been correctly identified. The following localities are represented there:—Southern Arabia, Bahr el Ghazal, Somaliland, Abyssinia, British East Africa, Uganda, northern Belgian Congo.

Alexander obtained the bird at Angu on the Uelle River and also on the Ubangi River in the Congo region. It is worthy of note that all the specimens obtained in the Belgian Congo and Cameroon were shot during the winter months, November to February.

The occurrence of this Nightjar in Cameroon is of special interest.

Caprimulgus binotatus.

Caprimulgus binotatus Bonaparte, Conspect. Gen. Av. 1850, p. 60—Type locality: Dabocrom, Gold Coast; Sharpe, Ibis, 1904, p. 612; Bates, Ibis, 1911, p. 516.

Mr. Bates has now sent two more examples of this extremely rare and interesting Nightjar, and with great generosity has presented them with other rare things to the British Museum.

He had already procured a single male bird at Efulen in March 1902, and this bird, which is in the National Collection, was duly recorded and commented upon by the late Dr. Sharpe (*l.c.*). The next specimen (No. 4107) was obtained at Bitye, River Ja, on the 19th of February, 1910, and is likewise a male—the occurrence of this particular bird has already been noted by Mr. Bates (Ibis, 1911, p. 516). In this paper Mr. Bates remarked that in specimen 4107 there was a distinct diagonal buff band on the feathers of the scapulars, and expressed his opinion that these characters were distinguishing marks of the male sex, “supposing the original description to have been made from a female.” In this surmise Mr. Bates is perfectly correct, as he has now himself proved by securing yet a third example—a female

this time—on the 9th of March, 1915, at Bitye. This bird lacks any trace of the diagonal bar on the scapulars.

The most remarkable character exhibited by this Nightjar is the entire absence of spots on the inner web of the quills, which are uniformly coloured, and as Dr. Sharpe pointed out when the first of Mr. Bates's specimens came under his notice, resembles in this respect *C. concretus* of Borneo.

The wing-measurements of Mr. Bates's three specimens are as follows:—

♂ (Efulen), 153 mm.; ♂ (No. 4107, Bitye), 141 mm. (barely); ♀ (No. 5942, Bitye), 148 mm.

Caprimulgus binotatus is recorded only from Cameroon and from the Gold Coast (Dabocrom) [Hartlaub, J. f. O. 1855, p. 355].

***Caprimulgus batesi*.**

Caprimulgus batesi Sharpe, Bull. B. O. C. xix. 1906, p. 18—Type-locality: River Ja, Cameroon.

Caprimulgus batesi Sharpe, Ibis, 1907, p. 432; Bates, Ibis, 1909, p. 25.

We had already received four adult specimens of Bates's Nightjar, collected on the River Ja in January, March, July, and August, at the British Museum. The present collection includes four adult birds collected at Bitye in February, July, and August. Numbers 3481 and 4936 are retained for the National Collection.

***Cosmetornis vexillarius*.**

Semeiophorus vexillarius Gould, Icones Avium, 1838, pl. 13—Type locality: Sierra Leone.

Cosmetornis vexillarius Sharpe, Ibis, 1907, p. 432; Bates, Ibis, 1909, p. 26.

There are three specimens of the Pennant-winged Nightjar in the present collection (Nos. 4140, 5987, 5947), all of which were obtained in March 1910, 1914, and 1915. No. 4140 is a male with the white belly barred with brown, while the other two are females. These are not the three birds mentioned by Mr. Bates (*l. c.*) and already recorded by Sharpe

(*l. c.*), but it is noteworthy that all six birds were obtained in March "at the end of the dry season," as Mr. Bates tells us in his paper. *C. vexillarius* apparently only visits this part of Cameroon at this time of year.

In an interesting footnote Messrs. Sclater and Praed (Ibis, 1919, p. 659) point out that we may accept as the type of this species a bird in the British Museum collection, Brit. Mus. Reg. No. 55/12/19/63, obtained by James Barlow, Esq., from Sierra Leone. From information on the label it appears to have been the bird originally described by Gould. I agree with Messrs. Sclater and Praed that we may accept this bird as the type of the species.

***Merops persicus chrysocercus*.**

Merops chrysocercus Cabanis & Heine, Mus. Hein. ii. 1860, p. 139—Type locality: Senegal.

The two specimens obtained by Mr. Bates at Akonolinga, Nyong River, do not belong to the typical race but to *M. persicus chrysocercus*. There is a specimen in the British Museum named by Dr. Hartert *M. p. chrysocercus* from Oued Nca, which almost exactly resembles Mr. Bates's bird (No. 5272) both in the colouring of the upper parts and in the length of the two middle tail-feathers. The back has not got the golden wash ascribed to this species. The second specimen obtained by Mr. Bates is immature. I cannot find that Mr. Bates has obtained this Blue-cheeked Bee-eater previously in Cameroon.

***Melittophagus gularis australis*.**

Meropiscus gularis australis Reichw. J. f. O. 1885, p. 222—Type locality: Gaboon and Cameroon.

Melittophagus australis Sharpe, Ibis, 1904, p. 611; 1905, p. 465; 1907, p. 431; Bates, Ibis, 1908, p. 564.

Melittophagus gularis australis Bates, Ibis, 1909, p. 24.

Without counting the two birds from Bitye which Mr. Bates obtained in 1909 and 1910, there are seven other specimens in the British Museum from Cameroon which Mr. Bates obtained at Efulen and on the Ja River. These

all show the characters which Reichenow assigned to this race. In no single specimen is there any trace of the pale blue eyebrow streak as in *M. g. gularis*, and in all but two the feathers of the breast are streaked intermittently with red.

In addition to the specimens obtained by Mr. Bates in Cameroon, there are in the British Museum two birds from north Angola obtained by the late Dr. Ansorge and eight birds from the northern Belgian Congo (Uele River and Aruwimi River districts). There is no question but that these birds belong to the southern form *M. g. australis*.

Besides the specimens enumerated we have five birds from Gaboon, and here we are faced with a difficulty. Reichenow (Vögel Afrikas, ii. p. 313) calls the Gaboon bird *M. g. australis*, and obviously this should be the case; but of the five birds before me, three at any rate are inseparable from typical *M. g. gularis*, having the wide pale blue eyebrow streak and no indication of red on the feathers of the breast. On the other hand, two other specimens from Gaboon have the characters of *M. g. australis* clearly shown. Had the specimens similar to the typical form been secured in Cameroon and not in Gaboon (two were collected by Du Chaillu and the other is from the Gould collection), it would have been easier to explain their presence than is the case now.

Melittophagus variegatus variegatus.

Merops variegatus Vieill. Nouv. Dict. d'Hist. Nat. vol. xiv. 1817, p. 25—Type locality: Malimbe, Loango.

The five adult specimens of the Variegated Bee-eater are the first which Mr. Bates has sent home from Cameroon, and it is noteworthy that all were obtained by him in January 1913 on the Nyong River at a place called Akonolinga. Mr. Claude Grant figured a race of this Bee-eater from Rhodesia (Ibis, 1915, p. 297, pl. iv.), and in the text of his paper remarks that most specimens of *M. v. variegatus* from western Africa "have no superciliary stripe or only an incomplete one," noting, however, that he was unable to handle a sufficient number of well-collected specimens from

the west. The five beautiful skins in Mr. Bates's present collection show the blue superciliary stripe very distinctly.

With the material available I do not feel inclined to accept Mearns's name for the East African race which that ornithologist considered separable from the typical race.

The range of *M. v. variegatus* seems to be as indicated by Mr. C. Grant in his paper quoted.

Eurystomus gularis neglectus.

Eurystomus gularis neglectus Neumann, Orn. Monatsber. xvi. 1908, p. 28—Type locality: Canhoça, Angola; Bates, Ibis, 1911, p. 510.

Eurystomus gularis Sharpe, Ibis, 1904, p. 606.

Having compared the series of *E. gularis* in the British Museum, I agree that the two races must be recognised. In the series before me the distribution seems to be as follows:—

E. gularis gularis. Sierra Leone, Gold Coast, and Northern Nigeria.

E. gularis neglectus. Southern Nigeria, Cameroon, Gaboon, Angola, Belgian Congo.

E. g. neglectus are certainly more violet-coloured on the under surface than typical specimens, and most of the ten specimens examined have a distinct violet wash on the basal half of the two middle tail-feathers, although, as instanced by specimen No. 3262 and pointed out by Mr. Bates himself (Ibis, 1911, p. 606), this character is not always present.

Agapornis zenkeri.

Agapornis zenkeri Reichw. Orn. Monatsber. 1895, p. 19—Type locality: Yaunde, Cameroon; Sharpe, Ibis, 1904, p. 605; Bates, Ibis, 1905, p. 89.

The present collection contains three examples of this little Parrot [Nos. 4285, 4290, and 5496], which Mr. Bates tells us (Ibis, 1911, p. 197) were shot amongst others "with bows and arrows." Specimens of this Parrot have been obtained by Mr. Bates in Cameroon at Efulen and at Bitye, River Ja. Reichenow (Vögel Afrikas, ii. p. 19) gives only

two localities from which specimens were then known, Yaunde and Manjema. The first-named town is, of course, in Cameroon, while Manjema is in the Belgian Congo immediately west of the northern end of Lake Tanganyika. Recently this bird was obtained by Dr. Christy at Bosabangi in the Belgian Congo and at Poko on the Uele River. There are also two specimens in the British Museum from Bompona on the Congo River. It appears, therefore, that this little Parrot extends its range right across central Africa from Cameroon to the eastern boundary of the Belgian Congo. Judging from the few specimens which travellers and collectors have brought back, it must be either very rare or very locally distributed.

Accipiter sharpei.

Accipiter sharpei Reichw. Vög. Afr. i. 1901, p. 564—Type locality: [? Gaboon]; Sharpe, Ibis, 1904, p. 101.

Accipiter batesi Sharpe, Bull. B. O. C. xiii. 1903, p. 50.

The present collections contain two additional specimens of this beautiful little Hawk—a male [No. 4663] shot on the 25th of December, 1911, and another male [No. 4926] shot on the 6th of August, 1912, at Bitye (2000 ft.). Unfortunately Mr. Bates failed to secure a female.

The bird which Sharpe named *A. batesi* is said by Mr. W. L. Sclater to be the female of *A. hartlaui sharpei*. Including this latter bird, which was procured at Efulen, Cameroon, there were hitherto only three specimens in the British Museum—a male from Gaboon and a male collected by Bates at Efulen in May 1903.

I am doubtful whether *sharpei* and *batesi* will prove to be synonymous. Certainly the two birds were procured from localities not far separated from one another. Only further material can settle this point satisfactorily.

Buteo auguralis.

Buteo auguralis Salvad. Atti Soc. Ital. viii. 1865, p. 377—Type locality: Abyssinia.

The female shot on the 2nd of March, 1915, at Bitye

seems to be the first record of this species from Cameroon.

We have specimens in the British Museum from the Egyptian Sudan and Abyssinia in the east, and from Sierra Leone, Gold Coast, French Congo, and Portuguese Congo in the west.

Spizaetus africanus.

Limnaetus africanus Cassin, Proc. Acad. Philad. 1865, p. 4—Type locality: Ogobai River, Gaboon.

The only specimen which Mr. Bates procured of this rare bird—a male shot on the 16th of December, 1913, at Bitye, R. Ja—was described by Mr. W. L. Sclater (Bull. B. O. C. xxxix. p. 87) as *Spizaetus batesi*, sp. nov. Mr. Sclater had then overlooked the fact that what must evidently be the same bird had been already described by Cassin; but he discovered and corrected his mistake himself in the following number of the 'Bulletin' (vol. xxxix. pp. 93, 94).

Pteronetta hartlaubi.

Querquedula hartlaubi Cassin, Proc. Acad. Philad. 1859, p. 175—Type locality: Camma and Ogobai (Gaboon).

Pteronetta hartlaubi Sharpe, Ibis, 1904, p. 98, 1907, p. 425; Bates, Ibis, 1909, p. 6, 1911, p. 482.

Pteronetta hartlaubi albifrons Neumann, Bull. B. O. C. xxi. 1908, p. 42.

In 1908 Oscar Neumann gave a name to the form of Hartlaub's Duck from the Upper Congo, Ituri, and Uele Rivers, naming it *P. h. albifrons*. He separated it from typical examples of *P. hartlaubi* (Cassin) on account of adults of both sexes having "a large white patch on the forehead, extending to the middle of the vertex," noting "in the West-African form the females never had any white on the head, but in the males there were sometimes a few white feathers on the forehead."

In 'The Ibis,' 1911, p. 482, Mr. Bates makes the following interesting observation:—"Male specimens (Nos. 3661 and 4143) from Cameroon have a *small* white spot on the fore-

head at the base of the bill, but have not nearly so much white as the birds which Neumann has called *P. h. albifrons* (Bull. B. O. C. xxi. p. 42). All my female examples (Nos. 29, 33, 4142, and 4459) have either no white or a very faint 'ticking' of white on the forehead. This white spot is a sexual marking of the male, which is beginning to be acquired by fully adult or old females; it is more developed in birds from the Upper Congo region than in those from the West Coast."

Mr. Bates has now forwarded the birds mentioned in the above note to England, together with three male birds (Nos. 4592, 4664, and 5543) which he obtained since writing in 'The Ibis' for 1911. The series which are now before me clearly show that Neumann was in error in thinking the white patch of the forehead a subspecific character. Mr. Bates was clearly right when he pointed this out, although it does not appear to be confined to the male bird alone. The three male birds above noted have an equally large (if not larger) white patch at the base of the bill as any birds from the northern Belgian Congo, specimens of which, named *albifrons*, in Mr. Neumann's own handwriting, are in the British Museum. It is therefore clearly not more developed, as Mr. Bates suggested, in birds from the Congo than in West Coast examples.

As to this patch being a sexual character of the male, an examination of Mr. Bates's birds from Cameroon would lead one to think that this was the case; there are, however, adult females in the National Collection from the Congo district showing as much white at the base of the bill as any males I have examined.

The fine series now sent home by Mr. Bates includes two beautiful downy nestlings.

The range of this species appears to be Sierra Leone (*Kelsall*), Liberia (*Pye-Smith*), N. Belgian Congo, Boma (*Harrison*), Uele River (*B. Alexander*), Tingasi (*Emin Pasha*), Ituri Forest (*Camburn*), Gaboon (*Du Chaillu*), S. Cameroon (*Bates*). Reichenow, Vög. Afrikas, i. p. 123, includes other localities in the districts mentioned here.

Lampribis rara.

Lampribis rara Rothsch., Hart., & Kleinschm., Nov. Zool. iv. 1897, p. 377—Type locality: Denkera, Gold Coast.

In 'The Ibis,' 1914, pp. 622-626, I attempted to disentangle the confusion into which *Lampribis rara* and *Lampribis olivacea* had fallen. I then showed that *Ibis olivacea* Du Bus ought not to have been confused with *L. rara*; and I then accepted the following as the range of these two very distinct species:—

L. rara. Ashanti, Cameroon, Upper Congo.

L. olivacea. Prince's Isl., St. Thomas Isl., Cameroon, and the coast of Guinea.

Further material has induced me to considerably alter the views then expressed with regard to the range of these two birds, but all I wrote as regards the confusion of the two forms I now stand by. My paper was apparently overlooked by Dr. Chapman when in Bull. Amer. Mus. Nat. Hist. xxxi. 1912, p. 235, he gives a description of a bird obtained by Du Chaillu on the Muni River, which is obviously a specimen of *Lampribis rara*, and calls it erroneously *Lampribis olivacea*, Elliot's wrongly named figure (P. Z. S. 1877, pl. li.) leading him into the same error which I tried to correct in 1914.

Unfortunately, when I wrote about these Ibises in 'The Ibis' (*l. c.*), I myself overlooked a much more important paper, written by Reichenow (Orn. Monatsber. xi. 1903, pp. 132-136).

In this paper Reichenow reviews the forms and recognises four different birds:—

1. *Lampribis rara*, from the Gold Coast to Angola.
2. *Lampribis splendidus*, from Liberia.
3. *Lampribis cupreipennis*, from Cameroon.
4. *Lampribis olivaceus*, from Prince's Island and St. Thomas.

1. LAMPTRIBIS RARA.

Lampribis rara Rothsch., Hart., and Kleinschm.

[Nov. Zool. iv. p. 377. Type loc.: Denkera, Gold Coast. Type specimen in the British Museum, collected by Ussher 5/11/71.]

As the authors of this species named Ussher's bird from Denkera, specimens from the Gold Coast must bear the above name. The bird is figured in P. Z. S. 1877, p. 477, pl. li., and there erroneously named *Ibis olivacea*.

We have only specimens from the Gold Coast, Cameroon, and the Upper Congo in the British Museum; while Reichenow records it from Gaboon and Angola in addition.

2. LAMPTRIBIS SPLENDIDUS.

Lampribis splendidus Salvadori, Ibis, 1903, pp. 184-185—
Type locality: Liberia.

I have not seen specimens of this Ibis, but a complete description of the bird is given by Salvadori (*l. c.* p. 185). From the description the Liberian bird seems to be more nearly allied to *L. olivacea* than to the spotted-breasted *Lampribis rara*. We have no examples of this bird in the British Museum. It may be only a subspecies of *Lampribis olivacea*.

[LAMPTRIBIS CUPREIPENNIS.

Theristicus cupreipennis Reichenow, Orn. Monatsber. xi. 1903, p. 134—Type locality: Cameroon.

In the 'Ornithologische Monatsberichte' for 1903, Reichenow gives a description of a bird which he obtained from Cameroon, and which he named *L. cupreipennis*. The description agrees with a bird in the British Museum, which was obtained by Mr. G. L. Bates at Efulen, Cameroon (No. 158), on the 19th of May, 1903, and which in 'The Ibis,' 1914, p. 623, I referred to *Lampribis olivacea*, thinking it might be an immature example of that bird. At first sight, therefore, it would appear that we must call the Cameroon bird *Lampribis cupreipennis* of Reichenow, but before we accept this name for the uniform-breasted, bronze-winged, short-billed Ibis from Cameroon, let us examine the next species, *L. olivacea*, mentioned by Dr. Reichenow in his paper (*l. c.*), of which species we shall find that *L. cupreipennis* is a synonym!]

3. LAMPTRIBIS OLIVACEA.

Ibis olivacea Du Bus, Bull. Acad. Roy. Sci. Belg. 1837, p. 105, pl. iv., et Esquisses Ornithologiques, 1845, p. 5, pl. iii.—Type locality : “La côte de Guinea.”

The Coast of Guinea! Clearly this is the type locality of *Lamptribis olivacea* and not Prince’s Island, so that if it is proved that the Prince’s Island bird and the bird from the mainland are different, the name *Lamptribis olivacea* (Du Bus) must apply to the mainland bird, and the Prince’s Island bird requires a new name. This I named in the ‘Bulletin’ of the British Ornithologists’ Club, vol. xl. 1919, pp. 4–7, to which I must refer the reader; and in this paper, as the Prince’s Island bird was left without a name, I named it *Lamptribis rothschildi*, and made the type an adult male in the Genoa Museum, collected on the 26th of January, 1901, by Leonardo Fea at Infante d’Henrique, Principe. I have given a full description of this bird in the ‘Bulletin’ (l.c. p. 7), and will not therefore repeat it here.

Briefly, then, we have the following forms in this genus in West Africa :—

LAMPTRIBIS RARA. Gold Coast (terra typica), Cameroom, Gaboon, and Upper Congo.

LAMPTRIBIS OLIVACEA. The Coast of Guinea (terra typica), S. Cameroom.

LAMPTRIBIS ROTHSCILDII. Prince’s Island (terra typica), St. Thomas Island.

LAMPTRIBIS SPLENDIDUS. Liberia (terra typica).

Nycticorax leuconotus.

Ardea leuconotus Wagl. Syst. Av. 1827, p. 189 (sp. 33)—Type locality : Senegambia.

Nycticorax leuconotus Bates, Ibis, 1911, p. 485.

The immature male Heron (No. 4042) which Mr. Bates obtained at Bitye on the 29th of November, 1909, can be none other than *N. leuconotus*, to which species he correctly assigned it in ‘The Ibis’ (*supra*). It is quite a young bird, but is not nearly so spotted on the wing-coverts as other young birds of *N. leuconotus* in the British Museum.

Phalaropus fulicarius.

Tringa fulicaria Linn. Syst. Nat. 10th ed. 1758, p. 148

—Type locality: Hudson Bay.

The interesting occurrence of the Grey Phalarope in Cameroon is worth recording here. Mr. Bates shot a male at Bitye on the 27th of March, 1912. The Grey Phalarope is said in the B.O.U. List of British Birds to be an accidental visitor to North-West Africa; nothing is said of its ranging in Africa down the west coast. The present is the most southerly record of which I am aware. Mr. P. R. Lowe obtained it at sea near the Cape Verde Islands and Mr. C. Chubb has recorded it from Liberia.

Canirallus oculeus batesi.

Canirallus batesi Sharpe, Bull. B. O. C. x. 1900, p. lvi.—

Type locality: Rio Bénito, French Congo; Sharpe, Ibis, 1904, p. 95.

Sharpe separated as a distinct species the Rail, inhabiting the French Congo and Cameroon, from the allied *Canirallus oculeus* of the Gold Coast. In any case *C. batesi* is but a subspecies of *C. oculeus*, and indeed is so close to that form that Reichenow unites all birds from Liberia to the Congo under one name. I do not think he is correct in doing so, as the Gold Coast birds, of which we have five specimens in the British Museum, are distinctly paler olive-green on the upper parts, with less of a rufous tinge than is exhibited by most of the birds from Cameroon and the Rio Bénito.

The two birds just sent home by Mr. Bates are a male and female (Nos. 4671 and 4426). The female is much more rufous on the neck and nape than the male, which is more olive above and has the underparts paler reddish-chestnut than the female.

Himantornis hæmatopus hæmatopus.

Himantornis hæmatopus Hartl. J. f. O. 1855, p. 357—Type

locality: Dabocrom, Gold Coast; Sharpe, Ibis, 1904, p. 95, 1907, p. 421; Bates, Ibis, 1911, p. 483.

Three more examples of this bird have now been sent by Mr. Bates to the Museum. It will interest him to know that we have recently acquired, through the kindness of the Belgian authorities, a further example of the rare rufous-backed *Himantornis hamatopus whitesidei* Sharpe, obtained by Dr. Christy at Poko on the Uele River, Belgian Congo—the first since the type was discovered.

***Sarothrura elegans reichenovi*.**

Sarothrura reichenovi Sharpe, Cat. Birds Brit. Mus. xxiii. 1894, p. 121—Type locality: Cameroon; Bates, Ibis, 1909, p. 7.

With a series of sixteen males and females from south-east Africa and from Cameroon before me, I have been able to form an opinion on the validity of *S. reichenovi*.

I consider that it must be kept as a subspecies of *S. elegans*, the Natal form, and that Sharpe's original description of *S. reichenovi* is very misleading.

The three male birds of *S. e. reichenovi* sent home by Mr. Bates, together with the four specimens he had sent in former collections, has enabled me to satisfy myself that the above comparison is correct.

Dr. Reichenow did not recognise this form himself (*Vögel Afrikas*, i. p. 287), but I am sure that he will do so on further examination, provided that he has plenty of material, as also will Mr. Chapin.

Sharpe maintained that it was "everywhere much darker in colour" than *S. elegans*, "the rufous of the head and breast being deep chestnut instead of orange-rufous, this chestnut colour extending over the whole throat to the base of the bill." I have now five adult males from Cameroon to compare with the seven adult males from Natal, and in only one bird from Cameroon (No. 4620) is the chestnut of the throat and breast darker than in any of the Natal specimens. The females are practically indistinguishable. I measured the wings, thinking there might be something in the size, but males from Cameroon measure 85–90 mm.; from Natal, 80–88 mm.

A comparison of Sharpe's description with actual specimens is therefore very misleading, and without a series of both forms one would be inclined to say that *S. reichenovi* and *S. elegans* are synonymous.

A closer examination, however, reveals the fact that these two Rails, as might certainly be expected from their distribution, are separable on characters which Sharpe overlooked. Dr. van Someren pointed out the differences to me, and they are plainly visible:—

The spots on the back of *S. e. reichenovi* are less numerous and less sandy-coloured than in *S. e. elegans*; the bill is also shorter and heavier. These characters serve to distinguish the two forms from one another.

Besides the Cameroon and Natal specimens, we have in the British Museum a single female which closely resembles the female of this species from Mubinde, Uganda, but which may prove to be separable when further material is available, or it may be the female of *S. e. loringi*.

The present range appears to be very doubtful—Uganda and Cameroon.

We have, therefore:—

SAROTHRURA ELEGANS ELEGANS (Smith)—Type locality:
Port Natal. *Range.* Natal.

SAROTHRURA ELEGANS REICHENOVII Sharpe—Type locality:
Cameroon. *Range.* Cameroon and ? Uganda.

SAROTHRURA ELEGANS BURYI Ogilvie-Grant—Type locality:
Dubar. *Range.* Wagga Mountains, N. Somaliland.

SAROTHRURA ELEGANS LORINGI Mearns*—Type locality:
Mt. Kenia. *Range.* ? Kenya Colony.

We have only a single female (the type) of *S. buryi*; but I feel certain that when the male is discovered, it will prove to be a subspecies of *S. elegans*, and I therefore include the Somaliland bird as a subspecies of the Natal bird.

* I have not seen the type or any specimens of *S. e. loringi* Mearns [Smithson. Miscell. Coll. 65. No. 13. 1915, p. 8], and include it here on the opinion of Mr. Chapin of the American Museum of Natural History.

Sarothrura pulchra subsp.

Examination of the Rails formerly named *Sarothrura pulchra* (Gray) reveals the interesting fact that there are apparently three or four distinct races of this form, as has already been pointed out by Neumann. The type of *Crex pulchra* Gray [Griffith's Cuv. Anim. King. vol. viii. Aves, p. 410] is in the British Museum. It is an adult male, but the sex was not ascertained. The only locality on the label is "Africa." In the Catalogue of Birds, vol. xxiii. p. 117, "West Africa" is supplemented for the locality from which it was obtained. In the original description no type locality is mentioned.

The next mention of this Rail is in Gray's Zool. Miscell. 1831, p. 13, where no locality is mentioned either.

Gray therefore does not himself designate a type locality for this species.

The first mention of a locality from which this Rail has been obtained is given, prior to Gray's work appearing, by Latham in his 'History of Birds,' vol. ix. 1824, p. 379, where, under the English heading, "Rufous-headed Rail," he gives the description of a female bird which he says inhabits Sierra Leone. This description can only apply to the female of *Sarothrura pulchra*, and we may therefore accept Sierra Leone as the first designated locality of this species.

It is next noted by Swainson in his 'Birds of West Africa,' 1837, p. 243, but again no particular habitat is mentioned.

There is only one other name for this Rail, i. e. *Rallus cinnamomeus* Lesson [Rev. Zool. 1840, p. 99], where the bird from Casamance (Portuguese Guinea) is thus designated.

I have not seen a single specimen from Sierra Leone, but there can be little doubt that it is the same as the Gold Coast bird which we know to be *S. pulchra* of Gray (*cf.* Schlegel, Mus. Pays-Bas, Râles, 1865, p. 26—Gold Coast). I have also before me several specimens from Fantee and Bibiani, as well as birds from Portuguese Guinea and the Gambia,

and these all belong to the same race and must be known as *Sarothrura pulchra pulchra*.

Hitherto this species has been said by Sharpe (Cat. Bds.) and Reichenow (Vögel Afrikas, i. p. 286) to range from Senegambia to Gaboon and Angola, east to the Congo.

Neumann (Bull. B. O. C. xxi. p. 45) describes two races of *S. pulchra* :—

(A) *S. p. centralis*—Type loc. : Mswa, on the west shore of Lake Albert. *Habitat*. Lake Region of Central Africa.

(B) *S. p. zenkeri*—Type loc. : Bipinde, S. Cameroon. *Habitat*. South Cameroon.

In both, the males are almost indistinguishable from *S. p. pulchra*, and the females are therefore best dealt with separately.

In the first place, the female of *S. p. pulchra* has the ground-colour of the back black, closely barred with pale chestnut; the bars of pale chestnut and the bars of black are almost the same width. This is an important point to bear in mind. The black bars on the tail are, moreover, either wanting or only faintly indicated.

In the original description of *S. p. centralis* the female is said to be similar to the female of *S. p. pulchra*, but the tail has broad black bars, while in *S. p. pulchra* it is uniform chestnut or with only an indication of thin black bars.

Now, I have before me five females from the Jackson collection, collected at Mabira and Bugoma, Uganda. These birds bear out the character of the broadly banded tail, but they can be distinguished from *S. p. pulchra* much more readily by the barring on the upper parts (which from Neumann's description one would imagine to be similar to the barring in *S. p. pulchra*). The pale chestnut bars are, however, much narrower than the black bars, which are at least three times as wide as the pale bars. Thus the back has a much blacker appearance than in typical specimens. Although Neumann has omitted to mention this striking

character, these Uganda specimens can only be referred to *S. p. centralis*.

In *S. p. zenkeri* the female is said by Neumann in the original description to have the head and neck darker than in *S. p. pulchra* or *S. p. centralis*. Moreover, *S. p. zenkeri* is said by Neumann to be easily distinguished from both by having the upper side black, with but few brown bars, the intermediate black bars being from six to eight times broader than the brown bars. The black bars of the underside are also much broader than the brown ones; the tail is said to be black, with a few defined chestnut bars; the measurements are less than those of *S. p. pulchra* and *S. p. centralis*.

Now, the female type of *S. p. zenkeri* came from Bipinde, and the habitat is said to be "South Cameroon"; so when we recently received specimens of *S. pulchra* from Mr. Bates, collected at Bitye, R. Ja, S. Cameroon, I naturally expected these birds to be typical *S. pulchra zenkeri*. They do not, however, agree with the description of the type (which is in Berlin) any more than Sir Frederick Jackson's birds from Uganda agree with Neumann's description of *S. p. centralis*. In fact, the female birds which Mr. Bates obtained in southern Cameroon (Nos. 5443 and 5453) agree with female specimens from northern Angola, Tingasi, and Ndoruma, and only differ from Uganda birds in having the chestnut colour of the head, neck, and breast brighter.

We cannot possibly accept Neumann's name *zenkeri* for these birds, as the intermediate black bars on the back are only about three times as broad as the pale bars (*not* six times broader as they are said to be in *zenkeri*); the black and chestnut bars of the tail are about equal in breadth, and the tail cannot, therefore, by any stretch of imagination be called "black with a few defined chestnut bars"; moreover, the head and neck is, if anything, brighter chestnut than in *S. p. centralis*, not darker, as I gather Neumann infers his *S. p. zenkeri* to be, although in the original description this is very badly expressed.

We have the choice, therefore, of uniting birds from Lower

Guinea with *S. p. centralis*, or of considering it a distinct race distinguished

from *S. p. pulchra*, by having the black bars on the back decidedly broader ;

from *S. p. zenkeri*, by having a tail uniformly banded in black and chestnut, and by having the black bars of the back only three times as broad as the chestnut bars (instead of six times as broad), and by having a brighter chestnut head ; and

from *S. p. centralis*, by having the chestnut of the head brighter.

If we consider the Cameroon, Angola, and western Belgian Congo birds as distinct from *centralis*, we shall have the following races of *S. pulchra* :—

SAROTHRURA PULCHRA PULCHRA.

[*Crex pulchra* Gray, in Griffith's Cuv. Anim. King. vol. viii. Aves, p. 410—Type locality : Sierra Leone (Latham's Hist. Birds, ix. 1824, p. 379).]

Range. The Gambia, Portuguese Guinea, Sierra Leone, Gold Coast.

S. PULCHRA subsp.

Range. N.W. Belgian Congo (Tingasi and Ndoruma), Cameroon (R. Ja), N. Angola (N'Dalla Tando).

S. PULCHRA ZENKERI.

[*Sarothrura pulchra zenkeri* Neumann, Bull. B. O. C. xxi. p. 45—Type locality : Bipinde, S. Cameroon.]

Range. Bipinde District, S. Cameroon.

S. PULCHRA CENTRALIS.

[*Sarothrura pulchra centralis* Neumann, Bull. B. O. C. xxi. p. 45—Type locality : Mswa, on the west shore of Lake Albert.]

Range. Lake Region of Central Africa ; Uganda, and northern Kavirondo to Nandi.

Sarothrura böhmi böhmi.

Sarothrura böhmi Reichw. Vögel Afrikas, i. 1900, p. 290
— Type locality : Likulwe, Congo.

This distinct species was described by Reichenow from Likulwe, just north of Katanga in the southern Belgian Congo.

Unfortunately we have no typical birds in the British Museum ; in fact, the specimen now sent home by Mr. Bates, shot at Bitye, R. Ja, on the 29th of November, 1913, is the first of its kind which we have seen. The occurrence of this Rail so far from its typical locality at once suggested the possibility of its being a distinct form.

Dr. van Someren recently obtained two specimens of this Rail—one from the Nairobi Rifle-range, the other from Kisumu. These birds differ from the Cameroon specimen in the highly streaked appearance of the wing-coverts caused by each feather having two pronounced submarginal white streaks, considerably wider than the streaks on the back. I am inclined to think that the bird which Mr. Bates obtained at Bitye has not yet attained the fully adult plumage, as only three feathers of the greater wing-coverts are submarginally streaked with white.

Mr. Chapin now writes to me from America that he has specimens of *S. böhmi* from Faradje (Upper Uele) and from Medje.

It is, of course, quite possible that this Rail extends its range across central Africa, and that the Cameroon birds are identical with the Nairobi specimens ; but should further specimens be received from Cameroon and from the typical locality, it will be worth while comparing the specimens very carefully, as the possibility of a distinct West African race must not be overlooked. In any case, the occurrence of this Rail in Cameroon is of considerable interest.

Since writing the above, I have examined a female Rail obtained at Machakos, Brit. E. Africa, which I have named *Sarothrura somereni*. It is quite unlike any other Rail which I have seen (a full description of this bird appeared in Bull. B. O. C. vol. xl. 1920, pp. 8 & 28), and Dr. van Someren

thinks it is probably the female of his two male birds from Nairobi and Kisumu, which he believes are distinct from *S. böhmi*. If this is the case, it must, of course, be known as *Sarothrura böhmi somereni*.

While this paper was in the press I received yet another form of this Rail, caught at sea in lat. 10° 0' N., long. 15° 30' W. off the coast of French Guinea by Mr. W. P. Lowe. I have named this bird *Sarothrura böhmi danei* in the Bull. B. O. C. xli. p. 5, October 1920. It is very much blacker on the underparts than the typical form and is darker on the back, but other differences exist and are set forth in the original description.

If Dr. van Someren is correct in thinking *S. somereni* a race of *böhmi*, we shall have :—

1. SAROTHRURA BÖHMI BÖHMI Rehw.

Type loc. : Likulwe, Belgian Congo.

Range. Belgian Congo, probably westwards to Cameroon.

2. SAROTHRURA BÖHMI SOMERENI Bannerman.

Type loc. : Machakos.

Range. Kenya Colony.

3. SAROTHRURA BÖHMI DANEI Bannerman.

Type loc. : At sea off French Guinea.

Range. Unknown.

Sarothrura rufa bonapartei.

Corethrura bonapartei Hartl. Syst. Orn. Westafr. 1857, p. 242—Type locality : Gaboon.

A single example of this Rail appears in the collection which Mr. Bates has now sent to us. It is a male bird in adult plumage. Whilst working at this group of Rails, I had the advantage of examining a series of birds which Dr. van Someren sent to me for my opinion as to their being one or two new subspecies represented. I arrived at very much the same conclusions as Dr. van Someren had done working at Tring, and as he has now described two of these forms in the Bull. B. O. C. vol. xl. 1919, p. 20, I will

publish the notes which I made on the various forms while working through his birds.

We had specimens from Cape Colony, Natal, Angola, Cameroon, Gaboon, Sierra Leone, British East Africa, and Uganda; in addition to which a race had been described from the eastern shores of Lake Tanganyika, of which we had no examples.

We recognised five distinct forms as follows:—

1. SAROTHRURA RUFA RUFA (Vieill.)—Type locality: "Africa."

Range. Natal, Cape Colony, Transvaal.

2. SAROTHRURA RUFA LUGENS (Böhm)—Type locality: Ugalla (East of Lake Tanganyika).

Range. East of Lake Tanganyika.

3. SAROTHRURA RUFA ELIZABETHÆ van Someren—Type locality: Kisumu.

Range. Uganda, from Entebbe east to Elgon and Kisumu in Kenya Colony.

4. SAROTHRURA RUFA ANSORGEI van Someren—Type locality: Duque de Braganza.

Range. Angola.

5. SAROTHRURA RUFA BONAPARTEI (Hartl.)—Type locality: Gaboon.

Range. Gaboon, Cameroon, extending north to Sierra Leone.

We have no specimen of *Sarothrura antonii* (Madarasz & Neumann, Orn. Monatsber. 1911, p. 186—Ndassékera and Borders of Kenya Colony and Tanganyika Territory). Mr. Chapin thinks it will prove to be synonymous with *S. lugens*.

Haplopelia simplex plumescens.

Haplopelia plumescens Sharpe, Ibis, 1904, p. 95—Type locality: Efulen, S. Cameroon; Bates, Ibis, 1911, p. 488.

Mr. Bates has sent four more specimens of these interesting Pigeons—two males and two females. It is gratifying to find that these specimens fit in well with the key to the species which I prepared in my review of this

genus (*Ibis*, 1916, pp. 1-16). Mr. Bates has remarked on the back of one of his labels that he believes the species named *H. plumescens* Sharpe is identical with *H. simplex*, but he will see in my paper cited that this is not the case. *H. s. simplex* is restricted to the island of St. Thomas in the Gulf of Guinea (*cf.* *Ibis*, 1915, p. 119). I should like to take this opportunity to correct an error which appeared in my review of this genus (*l. c.*). On pp. 11 and 14 I gave the same range for both *Haplopetia simplex inornata* and *H. s. plumescens*. It should be as follows:—

H. s. inornata.

Range. Cameroon Mountain.

H. s. plumescens.

Range. Southern Cameroon (except Cameroon Mountain), River Ja district.

Aplopetia tesmanni Rehw. described from Bebai, S. Cameroon, is synonymous with *H. s. plumescens*.

V.—On the Genus *Macrosphenus* Cassin, with special reference to the races of *Macrosphenus flavicans*. By DAVID A. BANNERMAN, M.B.E., B.A., M.B.O.U.

THE type of the genus *Macrosphenus* is *M. flavicans* of Cassin (*Proc. Philad. Acad.* 1859, p. 42), and this species was described from the Camma River, Gaboon.

***Macrosphenus flavicans flavicans* Cassin.**

From material in the British Museum I consider that this species, of which we have seventeen examples in the British Museum, extends from western Cameroon, through Gaboon to Landana at the mouth of the Congo, and I also unite with it *Macrosphenus poensis* of Alexander (*Bull. B. O. C.* xiii. 1903, p. 36) which inhabits Fernando Po, as I cannot see any distinction between this and the mainland bird. It is also evident, as suggested by Sharpe and confirmed by Ogilvie-Grant (*Trans. Zool. Soc.* xix. 1910, p. 378), that *Macrosphenus zenkeri* Reichw. (*Orn. Monatsber.* 1898, p. 23),

described from Jaunde, Cameroon, and figured in Reichenow's Atlas, 1902, is founded on an immature example of *M. flavicans*.

Besides *M. flavicans flavicans*, there are at any rate three, and probably four, well-defined races in Africa, as follows :—

***M. flavicans hypochondriacum* (Rehw.).**

This name was proposed by Reichenow (Orn. Monatsber. 1893, p. 32) for a specimen obtained at Kinjawanga, immediately north of Ruwenzori, and I accept it for the birds inhabiting the northern Belgian Congo eastwards (the Uele and Aruwimi Rivers districts and the eastern Congo forest).

Specimens from these localities are appreciably brighter coloured (more golden and less olive) on the under surface than typical examples from Cameroon and Gaboon, and have in addition a slightly shorter bill. We have ten examples in the National Collection of this race.

***M. flavicans angolensis* Bannerman.**

This race was described by me (Bull. B. O. C. vol. xli. 1920, p. 6) from northern Angola—Type locality : N'Dalla Tando. I separated it from the typical species on account of its much shorter bill—varying in five specimens from 14·5–15 mm. (exposed culmen).

***M. flavicans leoninus* Neumann.**

This is another subspecies which has been described (Bull. B. O. C. xxiii. 1908, p. 46—Sierra Leone) from western Africa, a single example having been obtained by Robin Kemp at Rotifunk. Opinions differ as to whether the bird in question is an adult specimen. Ogilvie-Grant believed that it was an immature of *M. flavicans*. I am doubtful whether the bird is immature—as it has a yellowish throat, whereas quite immature examples of *M. f. flavicans* show traces of the grey throat at an early stage. It has a remarkably long bill (18 mm. exposed culmen, 21 mm. measured from the gape) for an immature bird, and the fact that no representative of *M. flavicans* is known to exist north of Cameroon is sufficient justification for the name to be kept up.

M. flavicans ugandæ van Someren.

This form was described from Mabira (Bull. B. O. C. xxxv. p. 126), and is said to inhabit the Uganda forests. It is darker than the typical form and is richer yellow on the underside.

The only other species in the genus besides *M. flavicans* and its subspecies are :—

Macrosphenus kretschmeri Rehw. & Neumann (Orn. Mon. 1895, p. 75—Kiboscho), of which I have never seen a specimen and which is only known to occur in the Kili-manjaro region; likewise *Macrosphenus griseiceps* Grote (Orn. Monatsber. 1911, p. 162—Mikindani, late German E. Africa), compared by the author with *M. kretschmeri*, and *M. albigula* Grote (Orn. Monatsber. 1919, p. 62—Mlalo, Usambara, Tanganyika Territory). I have not seen specimens of either.

Macrosphenus kempī (Sharpe) and *Macrosphenus concolor* (Hartl.), concerning which two forms the following remarks may be of interest :—

In the first place I wish to transfer the bird hitherto known as *Amaurocichla kempī* Sharpe from the genus in which Sharpe placed it and put it in the genus *Macrosphenus*, as it is evident that it has nothing whatever to do with *Amaurocichla bocagei*.

The bird figured as *Amaurocichla kempī* (Ibis, 1905, plate v. facing p. 231), named and placed in the genus *Amaurocichla* by Sharpe (Bull. B. O. C. xv. p. 38, 1905), cannot in my opinion be assigned to that genus, although Sharpe was himself the author of the genus *Amaurocichla*. The generic characters are given by Sharpe in P. Z. S. 1892, p. 228, and are as follows :—"Similar to *Crateroscelis*, but distinguished by the shape of the wing, the first primary being nearly as long as the second. Additional characters are :—The bill is as long as the head, and rictal bristles are absent, while the tail-feathers are somewhat acuminate." The type of the genus is *Amaurocichla bocagei*.

Now, the bird which has hitherto been known as *Amaurocichla kempī* differs markedly from *Amaurocichla bocagei*.

In the first place the principal character of the genus *Amaurocichla*—i. e., the first primary being nearly as long as the second primary, which is long—is not borne out by examination of the type of *kempi*. In the type from Sierra Leone the first primary is actually 14 mm. shorter than the second primary, which is short. The bill is longer (not as long as) the head, and the general aspect of the bird is entirely dissimilar. I unhesitatingly transfer the bird figured as *Amaurocichla kempi* to the genus *Macrosphenus*, and anyone examining the three specimens of *M. kempi* now in the British Museum will, I feel sure, endorse my action.

Compared with *Macrosphenus flavicans flavicans*, the most obvious differences are in the length of the tail—very much longer in *M. f. flavicans*,—and the totally different colour, olive-green in *M. flavicans* and subspecies, grey and rufous in *M. kempi*.

Mr. Willoughby Lowe, who has recently obtained a specimen of *M. kempi* near Lagos in southern Nigeria, tells me that in habits the bird resembles a Nuthatch, and that it has in life a strikingly elongated neck, out of all proportion to the size of the bird. Once seen alive it is a species which can never be forgotten.

If future workers do not agree with me in temporarily placing this bird in the genus *Macrosphenus*, an entirely new genus will have to be created for it—a course which I do not favour until we know more about this remarkable form and can compare its skeleton with a skeleton of *M. flavicans*.

The other species which I include in this genus, thereby following a suggestion of Mr. Oscar Neumann (Bull. B. O. (1. xxiii. p. 47), is *Macrosphenus concolor* (Hartl.) (Syst. Orn. Westafr. p. 62)—a species which has been usually included in the genus *Camaroptera*. It has, however, a hooked upper mandible, thereby differing from all the true members of the genus *Camaroptera*, and in general appearance seems to resemble a *Macrosphenus*. It however possesses

rietal bristles, thereby differing from the other members of the genus *Macrosphenus*.

To recapitulate, we have :—

MACROSPHENUS FLAVICANS FLAVICANS Cassin.

Type loc. : Camma River.

Range : Cameroon to the mouth of the Congo.

Synonyms : *M. poensis* Alexander. (Fernando Po.)

M. zenkeri Rehw. (Yaunde, Cameroon.)

MACROSPHENUS FLAVICANS ANGOLENSIS Bannerman.

Type loc. : N'Dala Tando, N. Angola.

Range : N. Angola.

MACROSPHENUS FLAVICANS HYPOCHONDRIACUM Rehw.

Type loc. : Kinjawanga, near Mt. Ruwenzori.

Range : N. Belgian Congo, Uganda.

MACROSPHENUS FLAVICANS LEONINUS Neumann.

Type loc. : Rotifunk, Sierra Leone.

Range : Sierra Leone.

MACROSPHENUS CONCOLOR (Hartl.).

Type loc. : "Guinea."

Range : Sierra Leone, Gold Coast, Cameroon, Fernando Po, N. Belgian Congo, Uganda.

* *MACROSPHENUS KRETSCHMERI* (Rehw.).

Type loc. : Kiboscho.

Range : Kilimanjaro Region, Kenya Colony.

MACROSPHENUS GRISEICEPS Grote.

Type loc. : Mikindani (late German E. Africa).

Range : Tanganyika Territory.

MACROSPHENUS KEMPI (Sharpe).

Type loc. : Sierra Leone.

Range : Sierra Leone and Southern Nigeria.

MACROSPHENUS ALBIGULA Grote.

Type loc. : Mlalo near Wilhelmstal.

Range : Usambara, S.E. shores of Victoria Nyanza, Tanganyika Territory.

* Now placed in this genus on the authority of Reichenow, *vide* *Vögel Afrikas*, iii, p. 614.

VI.—*A Note on the Breeding Birds of Crete.*

By Col. R. MEINERTZHAGEN, D.S.O., M.B.O.U., F.Z.S.

I ARRIVED in Crete on the 4th of June, 1920, and left the island in early July, having had my visit cut short for official reasons. H. L. Powell accompanied me as taxidermist.

Landing at Candia I collected for three days in the neighbourhood and then went direct to Mount Ida, the central hill-mass of Crete. Here I remained for about a fortnight. No collecting was done outside the Candia district.

The area comprising this district falls easily into three areas :—

- (a) Below 2500 feet. Human habitations and cultivation, mostly olives, vines, orchards, and corn.
- (b) Between 3000 and 4500 feet. Ilex forest on mountain slopes.
- (c) Above 4500 feet. The bare wind-swept hills of Ida and Nidha with the remarkable Nidha Plain. The summit of Ida is 8200 feet elevation, and snow was still lying about in drifts of many acres in extent above 6500 feet.

Travelling in Crete in summer is easy. The weather is perfect and one can sleep anywhere, though the nights on Ida were bitterly cold. I always bedded down in some garden, having taken no tent with me. On Mount Ida one has difficulty in avoiding an incessant wind, as shelter is rare, but we usually managed to get in a hollow. Staple foods can be obtained everywhere and good water abounds. Mule transport is the rule, a beast carrying about 400–450 pounds the whole day without fatigue. There is but one great drawback—expense. A naturalist, living simply, without tent or luxury, must be prepared to spend £100 per month, excluding his ticket to the island. Mules cannot be hired for less than £1 a day each. A guide-interpreter costs from £12 to £15 per month. My expenses were particularly heavy, as I was compelled to retain in my service the numerous policemen and consular messengers who were searching for me for three weeks.

The Cretans are charming and very helpful, more especially the shepherds of Mount Ida, whose evil reputation I emphatically deny. They are robbers by nature and are a law unto themselves, but if one appreciates that spirit of freedom and contempt for the soft civilization of plenty, they rank as nature's foremost gentlemen. The chieftain of Ida, one George Nikolokakis, though doubtless a thorn in the side of the Cretan police and the officials, was kindness itself to me, and I look back to his rough kind face and his imperious manners, with a desire to accept his kind invitation to stop with him for a complete summer.

Though I speak not a word of modern Greek, my derelict knowledge of ancient Greek was most useful. It was pleasant to hear the Chukar called "Caccaba," the Vultures "Gyps," the Ravens "Mavro Corax," the Larks "Corydallos," the Nightingale "Ædon," the Swallow "Chelidon," and the Eagle "Ætos."

Finally, I must again thank Dr. Hartert for the ungrudging help he always gives me at Tring, and Lord Rothschild for allowing me to make every use of his collection.

Specimens were obtained of every species mentioned, unless it is stated to the contrary. Wing-measurements taken flat, culmen-measurements from the junction of upper mandible and skull.

Corvus corax corax (L.).

Two young males obtained, both moulting into adult plumage. They belong to the typical race, there being no trace of the oily blue on the wing-coverts or brown on the upper parts as in *C. c. laurencei*.

It seems doubtful whether the Ravens of eastern Greece are *C. c. laurencei*, as stated by Reiser (Orn. Balcan. iii.). Gengler (J. f. O. April 1919) thinks they are some undescribed race, but the few I have seen myself in Greece are the typical race as in Crete (*cf.* also Stresemann, Avif. Macedon. p. 1).

The Raven is to be seen at all elevations in Crete, breeding in the hills apparently in March.

Corvus cornix minos Meinertz.

Corvus c. minos Meinertzhagen, Bull. B. O. C. xli. 1920, p. 19 : Candia.

This new race is pale and very similar to *C. c. pallescens* from Cyprus, but has a longer wing and a deeper and longer culmen.

It is a common bird, ascending to the Nidha Plain at 5000 feet. It breeds in olive and oak trees, the young being well on the wing by the end of June.

Garrulus glandarius cretorum Meinertz.

Garrulus g. cretorum Meinertzhagen, Bull. B. O. C. xli. 1920, p. 19 : Mount Ida.

Very near *G. g. ichnusæ* from Sardinia, but with a slightly redder neck and greyer back. Similar in size.

Not seen below 4000 feet, and apparently confined to the Ilex forest. Both full-grown and half-grown young seen in the middle of June.

Pyrhcorax pyrrhcorax (L.).

The Chough was abundant on Mount Ida between 5000 and 7000 feet. About 100 pair were nesting in the Kamares Cave in June, the young being well on the wing and a few still in the nest in mid-June.

The young have a peculiar call, not unlike that of *Merops apiaster*. Several smaller colonies were found in other smaller caves.

Doubtless the "Yellow-billed Choughs" reported by Miss Bate (Trevor-Battye : 'Camping in Crete') were the young of this species.

Chloris chloris subsp. ?

A single adult male obtained in worn plumage. In size it is nearest to *C. c. chlorotica*, but in general coloration is nearest *C. c. maderaszi* from Cyprus. It is certainly not *C. c. mühleii*, which is a darker and larger bird than my Cretan specimen.

Common from sea-level to 4500 feet, both in cultivation and in the Ilex forest. Full-grown young seen on 7 June.

Carduelis carduelis härmsi Reichw.

Four adults in worn breeding plumage agree well with birds in similar plumage from Palestine. After a further examination of birds from the Caucasus, Asia Minor, Palestine, and Cyprus, I am confident that only one race of the Goldfinch occurs as a breeding species in these localities. The difference in the intensity of the colour on the back among freshly-moulted birds and worn birds is very remarkable, and accounts for the many races which have been described from the range of *C. c. härmsi*.

Acanthis cannabina mediterranea Tschusi.

I cannot agree with Stresemann (Avif. Macedon.) that *A. c. mediterranea* becomes a synonym of *A. c. bella*. The latter race was described from Syria, and all Syrian birds which I have examined are most certainly *A. c. fringillirostris*. Stresemann appears only to have examined birds from Asia Minor, and these are quite likely *A. c. mediterranea*. It does not follow that Syrian and Asia Minor birds are similar. *A. c. bella* must therefore remain a synonym of *A. c. fringillirostris*.

A common breeding bird, but not seen below 2000 feet. Full-grown young were seen in early June. When I first saw these birds on Mount Ida, far away from bushes and among rocks and dwarf alpine plants, I thought they were Twites, more especially as I believe Drummond reported Twites from the island. I shot several of these Mount Ida Linnets, and I do not think the Twite exists in Crete.

Fringilla cœlebs subsp.?

Four males in worn breeding plumage appear to be less brown on the upper back than birds from the continent, and they are on the small side, the wings varying from 84 to 88 mm.

The Chaffinch is a common breeding bird from sea-level to the top of the Ilex forest at 5000 feet. Young were just out of the nest by the middle of June.

Cretan name "spinos."

***Passer italiae* (Vieill.).**

Cretan specimens are indistinguishable from birds from Italy. Common about all human habitations up to 2000 feet, and always nesting in buildings. Young were not out of the nest by the middle of June, when all hen birds were still being fed by the cocks.

***Emberiza calandra calandra* L.**

Two birds obtained do not differ from typical examples.

Not uncommon in suitable country from sea-level to 2000 feet. A nest with four incubated eggs was found on 13 June.

***Emberiza hortulana* L.**

Quite common and breeding between 2000 and 4000 feet, and a few at sea-level near Candia. Adults were feeding young in the nest in early June.

***Calandrella brachydactyla brachydactyla* (Leisler).**

Five adults are typical, wings varying from 88 to 98 mm. Found breeding commonly at two places, on the Nidha Plain at 5000 feet and near Varavara on the southern slopes of Mount Ida at 2000 feet.

***Galerida cristata meridionalis* Brehm.**

Six birds were obtained in very worn plumage, but I have been fortunate in being able to compare a winter bird in the Tring Collection with specimens from Greece and Albania.

A common breeding bird up to 2500 feet. First young seen out of the nest on 29 June.

***Lullula arborea* subsp.?**

Five birds in worn breeding plumage seem nearest to *L. a. flavescens* from the Balkans, but until autumn or winter birds are obtained I refrain from defining their race.

Fairly common above 1500 feet and reaching up to 6000 feet. Five incubated eggs were found on 18 June, and several broods seen on the wing at the end of the same month.

***Anthus campestris campestris* (L.).**

Four obtained are identical with others from southern Europe.

Common in suitable country between 2000 and 4000 feet, and a few were breeding at 6000 feet on Mount Ida.

***Certhia brachydactyla* subsp. ?**

Tree-Creepers were found at 4500 feet at the top of the Ilex forest on the southern slopes of Mount Ida, and three adults and three young were obtained. The former are in such worn plumage that it is impossible to say to which race they belong.

***Parus major peloponnesus* Parrot.**

Five adults in worn plumage appear to agree with birds from Greece.

Common from sea-level to the limit of the Ilex forest, say 4500 feet. Full-grown young were seen about by early June.

***Parus cæruleus ogliastræ* Hartert.**

An adult female and a young bird obtained. But I have examined Witherby's adult male collected by Lynes at Suda Bay, and I agree with Witherby (Ibis, 1912, p. 145) that the Cretan form belongs to this race. They are certainly not the typical race as stated by Jourdain ('Eggs of European Birds'). The wing of my female measures 61 mm.

Not uncommon in wooded country from sea-level to 5000 feet. Young were well on the wing by early June.

***Parus* sp. ?**

On two occasions on Mount Ida at 5000 feet in Ilex forest I heard and saw a brown Tit which I failed to secure. It was not the Marsh or Coal Tit.

***Lanius senator niloticus* (Bp.).**

Two breeding males have less white at the base of the central tail-feathers than Palestine breeding birds, and in this respect approach the typical race. Perhaps the formula *Lanius s. niloticus* > *senator* would be a convenient way of expressing this, as is done by Stresemann (Avif. Macedon.).

Birds from Crete certainly do not belong to the typical form as stated by Jourdain ('Eggs of European Birds').

A scarce breeding bird, occurring from sea-level to 4000 feet. A nest with five incubated eggs was found at Gnossos on 13 June.

Muscicapa striata striata (Pall.).

Two males obtained are identical with birds from Continental Europe.

The Spotted Flycatcher is a common breeding bird from sea-level to 4500 feet. A nest with five incubated eggs was found at 2000 feet on 11 June.

Locustella luscinioides luscinioides (Savi).

A male and fully-fledged young bird were obtained near Candia in early June. They agree with birds from southern Europe, but the male is small, having a wing of barely 60 mm., and a culmen of only 15 mm.

Not otherwise seen.

Hippolais sp.?

Probably *H. pallida*. Seen and heard on several occasions below 2000 feet. Not obtained.

Sylvia communis communis Lath.

Two males in worn breeding plumage were obtained. They approach nearest to the western race, though they are rather grey on the upper parts.

A fairly common breeding bird up to 2000 feet.

Sylvia melanocephala melanocephala (Gm.).

The breeding Cretan bird undoubtedly belongs to the typical race, though they are on the small side, wings of males varying from 57 to 59 mm., but the coloration is that of the typical race. Birds from the hills appear darker below than those from the plains.

The Sardinian Warbler is a scarce breeding species below 2000 feet. On Nidha Plain they were especially common at 5000 feet, where young were on the wing by the third week in June.

***Turdus merula* subsp.?**

Only one bird, an adult male, obtained. Wing 113 and culmen 25 mm. This is smaller than any other adult male I have examined from Europe, and from what I saw of the Blackbird in Crete, they all seemed uncommonly small. It seems likely that this is a new insular race, but a larger series are necessary before it can be named. A pair of live birds were brought to Egypt, where they are doing well in the Giza Zoological Gardens.

The Blackbird occurs throughout the country, but is very shy and difficult to obtain. Trevor-Battye ('Camping in Crete') thought the hill bird smaller than the plain bird, but I did not notice this difference.

Cretan name "kotsifos."

***Monticola solitarius solitarius* (L.).**

A female obtained belongs to the western race.

Occurs as a breeding species in all suitable country from sea-level up to 6000 feet.

Cretan name "petro kotsifos."

***Enanthe enanthe virago* Meinertz.**

Enanthe *en. virago* Meinertzhagen, Bull. B. O. C. xli. 1920, p. 20: Mount Ida.

Adult male with a more silvery mantle and larger culmen than in the typical race. Adult female closely resembling the male and not brown. Juvenile plumage tinged with grey, whereas there is no grey in the young of the other races.

A common breeding bird on Mount Ida above about 4000 feet and ascending to the summit of Ida at 8200 feet.

Fully-fledged young are about by the end of June.

These birds appeared to be equally at home in the Ilex forest, on the wind-swept slopes of Ida or among the snow drifts, perching with equal ease on tree or rock.

Mr. Witherby kindly lent me five birds from Suda Bay obtained by Capt. Lynes in March and early April. The four males have wings varying from 93 to 98 and culmens from 17.5 to 19 mm. One has a broad white forehead, two have

moderate white foreheads, and the fourth has a narrow white forehead. The female is typical of (*Enanthe* or *ananthe*, and has a wing of 90 and culmen of 17 mm. These birds, undoubtedly on spring passage, all belong to the typical race.

***Enanthe hispanica melanoleuca* (Güld.).**

Saxicola l. xanthomelana (H. & E.); Hartert, Vög. pal. Fauna, p. 687.

Two breeding males obtained belong to this eastern race. Black-throated and white-throated birds appear to be in equal numbers.

Fairly common below 3000 feet. Not seen above that altitude, though Trevor-Battye states they occur up to 6000 feet in the White Mountains in western Crete.

***Saxicola torquata rubicola* (L.).**

Two males and a female do not vary from typical specimens except that their culmens are on the large side, measuring 14 and 15 mm. The back of the two males is of a particularly intense black, but this also occurs among others from southern Europe.

The Stonechat occurred as a breeding bird at all elevations, being commoner at higher elevations than in the plains.

***Luscinia megarhynchos megarhynchos* Brehm.**

The western race of the Nightingale breeds in Crete up to 2000 feet wherever suitable conditions prevail. They were beginning to go off song about the third week in June. Two adults were obtained.

***Troglodytes troglodytes* subsp. ?**

Four adults and two young birds obtained. The culmen is large, varying from 13.5 to 15 mm. In typical *Troglodytes t. troglodytes* the culmen does not exceed 13.75 mm. The culmen is nearer that of *T. t. cypriotes* or *kabylorum*. The plumage of the adults is so worn that I have been unable to say definitely whether they are a new form or not. They appear to be greyer and more streaked on the back than other closely-allied forms, but this might be due to abrasion and bleaching.

The Wren was common on Mount Ida at over 4500 feet. Full-grown young with their parents were about in parties by the middle of June.

***Accentor collaris subalpinus* (Brehm).**

A single bird shot is referable to this Balkan race. I only saw them at Nidha Cave at 5500 feet. Trevor Batty (‘Camping in Crete’) found them common on Mount Ida at 7500 feet in June.

Stresemann (Avif. Macedon.) unites this race with the typical form. In this I cannot agree; my bird resembles others in the Tring Museum from the Balkans, and accords well with Hartert’s description (Vög. pal. Fauna, p. 763).

***Hirundo rustica rustica* (L.).**

A single breeding male obtained on 8 June. The specimen is white below, slightly tinged and blotched with chestnut. If the race *H. r. boissonneanti* Temm. is recognised it may belong to it, but I have not had any Balkan specimen with which to compare my examples.

The Swallow is a plentiful breeding bird wherever there are human habitations. Three nests found at Gnossos on 8 June had fresh eggs, hard-set eggs, and half-fledged young.

***Riparia rupestris* (Scop.).**

Common at all elevations where caves or rough craggy country occurs.

***Apus apus apus* (L.).**

Three breeding birds obtained agree with others from western Europe, and are not *A. a. marwitzi* or *A. a. pekinensis*.

Swifts were breeding abundantly at Candia and on all the small coastal islands off Candia. A few were seen in company with *Apus melba* on the summit of Mount Ida on 23 June, but I doubt whether they were up there for any other purpose but food.

***Apus melba melba* (L.).**

A common breeding species in the hills and on Dia Island off Candia. Three obtained are typical.

Caprimulgus europæus meridionalis Hartert.

A male obtained at 2000 feet on 13 June was the only one seen. Trevor-Battye ('Camping in Crete') saw them frequently in summer.

Cretan name "arno vysastra," a literal translation of Goat-sucker.

Otus scops powelli Meinertz.

Otus scops powelli Meinertzhagen, Bull. B. O. C. xli. 1920, p. 21 : Candia District.

This new race, intermediate between the typical form and *O. s. cyprius*, was common from coast-level to 2000 feet, and a few were heard in the Ilex forest at 4000 feet. Two clutches of eggs were taken from holes in buildings on 13 and 15 June, the former consisting of four incubated eggs, and the latter of two fresh and one incubated egg.

Birds were frequently heard calling by daylight, and it was not difficult at dusk to call them to quite close quarters.

Falco peregrinus subsp.?

A small Peregrine was twice seen in the hills, but none were obtained.

Falco tinnunculus tinnunculus L.

I obtained two breeding males, with wings measuring 223 and 245 mm. respectively. One of these birds is much redder below than most European birds, whilst the other is normal. I have recently examined a series of 157 Kestrels, and I find that in the southern part of their breeding range birds tend to become more red below than those breeding in central and northern Europe and Asia, though, of course, such red birds occur frequently in both the British Islands and throughout Europe. I am going fully into this question at a near date, but all that concerns us for the moment is that the Cretan breeding bird can only be referred to the typical form.

Kestrels were seen everywhere in small numbers. Two nests, both with half-grown young, were found in buildings. In both cases the cock bird was feeding the chicks, visiting

the nest only about three times a day. I never saw the hen bird at the nest in either case.

Falco eleonoræ Gené.

One obtained. There are large colonies of these Falcons on Dia and Paximadi Islands north of Candia, and I sincerely trust no ravening oologist will abuse this information. Occasional birds were also seen in olive gardens near the coast, and flying high over Crete at dusk.

Aquila chrysaetos, a *Buteo*, *Gyps fulvus*, and *Gypaëtus barbatus* were frequently seen but not obtained. *Ardea cinerea* was often seen on the coast near Candia, and had apparently bred on a small island, where an empty nest and full-grown young were seen.

Botaurus stellaris was twice seen near Candia in June, and may have been breeding.

Phalarocorax carbo breeds in colonies on the small rocky islands near Candia, where many empty nests were found in late June, and about 30 young seen.

Adults and full-grown young of *Anas platyrhynchos* were seen on the Halmyros stream near Candia on 2 July.

No examples of the above species were obtained.

Columba livia palæstinæ Zedl.

The Cretan Rock-Pigeon is referable to this race, being much paler than *Columba l. livia* on the upper parts and slightly smaller. Two birds obtained have white lower backs, and compare well with a large series from Palestine, Syria, and, curiously enough, Sollum in western Egypt. It would therefore appear that *C. l. palæstinæ* occurs not only in Palestine, Sinai, and Arabia, but in the eastern Mediterranean, with the exception of the Egyptian Delta, where the smaller *C. l. schimperi* occurs.

The wings of my two Cretan birds measure 216 and 220 mm., both males.

Rock-Pigeons were breeding commonly on all the islands near Candia, on the coast, and in the hill caves of Mount Ida. Let he who fancies himself at shooting try his hand

at a Rock-Pigeon coming out of Kamares Cave; if he recovers one bird for every three cartridges he will do well.

Most of the young birds were on the wing by the middle of June.

***Columba palumbus palumbus* L.**

A pair of breeding birds obtained agree in colour with continental birds, but are small, the wing of a male measuring 246 mm., and that of a female 236 mm.

Wood-Pigeons were common in the *Ilex* forest between 3000 and 4500 feet, coming down to 3000 feet to feed. No young were seen on the wing by the middle of June.

***Alectoris græca cypristes* Hartert.**

Three males and two females were obtained, all adult birds. Wing of males 155, 160, and 163, and of the females 148 and 151 mm. Cyprus birds vary from 162 to 169 in males, and from 153 to 157 in females, so the Cyprus birds are somewhat larger. Such a slight difference in a large bird cannot count for much, and as they agree absolutely in colour with breeding birds from Cyprus, I unite them with the Cyprus race.

The Chukar is thinly distributed below 3000 feet, above which they are abundant. Young birds from newly-hatched young to birds slightly larger than quail were seen in the last week in June.

***Coturnix coturnix* (L.).**

A pair were flushed out of some vines at 2000 feet on 30 June. None were obtained.

***Fulica atra atra* L.**

A single adult male was obtained at Halmyros, near Candia, on 2 July. The bird had not bred during the year. All its pinions were in very short quill.

***Burhinus œdicnemus saharæ* (Reichw.).**

Only one was seen—a male, shot near Candia on 9 June. Wing 239 mm. Its pale sandy colour agrees absolutely with birds in similar plumage from the Sahara and Palestine.

***Tringa ochropus* L.**

A flock of five birds were seen on 2 July near Candia, out of which a pair were shot. They were in complete breeding plumage, were very fat, and showed no signs of having bred.

Larus argentatus cachinnans was common off the coast near Candia, and had bred in a large colony on Paximadi Island; a young bird was found in the nest, but all the rest were on the wing.

Puffinus puffinus yelkouan and *Procellaria pelagica* were common at sea off eastern Crete throughout June, but I could not locate any breeding quarters.

VII.—*On the Economic Status of the Kingfisher*, *Alcedo ispida* Linn. By WALTER E. COLLINGE, D.Sc., F.L.S., M.B.O.U.

(Text-figure 2.)

I. *Introduction.*

THE brilliant external colouring of the Kingfisher (*Alcedo ispida* Linn.) makes it one of the most beautiful birds we have in this country, in consequence of which Yarrell (10) states, it is "so much sought after by the idle and thoughtless that its numbers, probably never very great in any part of the country, have of late years very sensibly decreased . . . but the most constant persecution the species undergoes arises rather from the delight . . . so many people take in possessing its stuffed skin; . . . and to this end more Kingfishers are probably shot or netted for English bird-stuffers than any other species." Although this statement was made nearly fifty years ago, it is equally true to-day. So recently as 1891 Mr. A. H. Cocks (2) reported that a local bird-stuffer had nearly a hundred Kingfishers sent to him to set up that year.

Further, as a frequenter of streams, brooks, and rivers, this bird has generally been regarded as injurious to fish-culture, and consequently has been ruthlessly shot.

Some little time ago the writer was appealed to for some definite information as to the precise nature of the food of the Kingfisher. Unfortunately, as in the case of so many other British birds, no such information was available; the present investigation was therefore undertaken.

The results here set forth are based upon the examination of 120 nest-contents, obtained from sixteen counties; 53 pellets; and the stomach-contents of 27 birds obtained from eight counties during all the months of the year excepting May, June, and December. Numerous field observations have also been made.

The method adopted throughout for estimating the food percentages is that known as the volumetric one (3).

TABLE I.—Showing number of adult Kingfishers and nest-contents examined in this investigation, arranged to show locality and month in which collected.

County.	Jan.	Feb.	Mch.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
													Birds. Nests.
Bedford ...	...	...	1/2	...	...	...	1/2	1/3	1/3	...	...	...	4 10
Cheshire ...	...	1/	1/	...	...	...	/1	1/1	/2	/2	...	...	3 6
Cumberland.	/2	2	...	1/	...	...	...	/2	1/6	/1	/1	...	2 14
Devon	...	...	...	...	...	...	...	/3	/1	/2	...	...	0 6
Dorset	/4	...	...	...	...	...	...	...	...	/2	1	...	0 7
Hants	...	...	...	...	...	...	...	...	...	/3	/1	/2	0 6
Hereford ...	...	1/	1/	1/	...	...	1/	1/4	/3	1/2	...	...	6 9
Leicester ...	...	...	...	...	...	...	...	...	/2	/5	/1	...	0 8
Lincoln ...	...	/2	1	...	...	...	...	...	...	...	...	/1	0 4
Middlesex ...	1/	...	1/	1/	...	...	...	...	1/7	/4	1/	...	5 11
Nottingham.	...	...	...	...	...	...	...	1/	...	1/3	...	...	2 3
Norfolk ...	...	...	...	...	...	...	...	...	/2	...	/2	...	0 4
Warwick ...	...	...	...	1/	...	...	...	/3	/2	...	/1	...	1 6
Worcester .	...	/2	1/	1/	...	...	...	...	1/5	1/2	/1	...	4 10
Yorkshire ..	/5	...	...	...	...	/4	...	...	/2	/3	...	...	0 14
Ireland .	...	...	...	/1	...	/1	...	...	...	...	...	...	0 2
Totals ...	1/11	2/6	5/3	5/1	...	/5	2/3	4/16	4/35	3/29	1/8	/3	27+120

The figures on the left denote the number of birds, and those on the right the number of nest-contents.

I acknowledge with many thanks the kindness of the Carnegie Trust for the Universities of Scotland, in defraying the whole of the expenses in connection with this investigation.

II. Historical.

References to the food and feeding habits of the Kingfisher are exceedingly few. Yarrell (10) states: "Its food consists of small crustaceans, aquatic insects, such as dragonflies, water-beetles, and little fishes—especially minnows and sticklebacks, while leeches are also said to enter into its diet."

Butler (1) writes: "Although very fond of small fish, these by no means constitute the sole food of the Kingfisher, for it is very fond of tadpoles and water-beetles; moreover, many of the small fry which are eaten are quite useless for human consumption, so that the bird has been treated with undeserved severity by pisciculturists, many of whom lose no opportunity of shooting it."

Newstead (8) examined the stomach-contents of nineteen specimens, in most of which he found minute and small fish-bones, one small gudgeon (*Gobio fluviatilis*), and remains of several water-boatmen (*Notonecta glauca*).

Forbush (4) refers to the American species as eating grasshoppers, and Mason (7) quotes certain authorities as to *A. ispida*, in India, feeding upon small fishes, tadpoles, and aquatic insects.

III. Field Investigations.

1. *Abundance*.—So far as I can learn from information supplied by different correspondents, the number of nesting sites has decreased during the last ten or twelve years, particularly in the following counties:—Cumberland, Cheshire, Devon, Hereford, Leicester, Middlesex, Warwick, Worcester, and Yorkshire.

Messrs. Jourdain and Witherby (5), in their valuable report on the effect of the winter 1916–1917 on our resident birds, state: "The diminution in the breeding stock is

shown by the fact that whilst most of its favourite breeding places on the lower reaches of the Thames were occupied in 1917, the upper reaches were deserted, though the birds have reappeared in 1918. In Devon, Worcester, Cheshire, and Cumberland considerable decreases were noted, and some diminution in Kent, Surrey, and Middlesex, while no change is reported from Radnor and Beds."

2. *Nesting Habits*.—Further observations on the nesting habits of the Kingfisher are very desirable. All the nests I have met with have been in the banks of streams. I doubt if they are always dug out by the birds, as on two or three occasions I have found that the old burrows of the water-vole have been utilized, and in another case the hole was formed by part of the bank of the stream being washed away beneath the root of a tree.

In all the nests examined I have found an accumulation of fish-bones and other indigestible portions of food, and only these.

While in many cases I have failed to observe any attempt at arrangement of the different items, in others there is undoubtedly a very definite nest formed, described by Yarrell (10) as follows :—"The eggs are laid, sometimes on the bare soil, but at others on the fish-bones already ejected by the birds and allowed to accumulate until they amount to a handful or more. These bones are cast up as pellets, but are apparently worked by the bird's movements, as she sits, into the shape of a cup; and, whether by pressure, by the moisture of the soil, or by both, they generally cohere so as to form a very pretty nest, more than an inch deep and quite smooth within, which with care may be removed so as to preserve its structure."

During the time the young occupy the nest the passage leading to the terminal chamber becomes almost filled with castings, excreta, etc.

In many cases two broods are reared in the season. Here, in Fifeshire, I have never known more than one.

3. *Food brought to the Nest*.—Fish, tadpoles, crayfish, and

the larvæ of various insects have been observed in the bird's beak when alighting before entering the nest. Fish are sometimes held crosswise, in which case the bird jerks them upwards catching them head downwards. In other cases they are held lengthwise, either by the head or the tail, and swallowed, this action being accompanied by a throw-back of the head.

When newly hatched the young are fed by the parents, but after a time they frequently do no more than deposit the food about half-way along the passage. In some cases it is allowed to remain there and become trampled down into the putrid mass of material which has accumulated there.

4. *Depredations.*—The opinion is frequently expressed that the Kingfisher destroys large numbers of young trout, and such an opinion seldom loses anything in its repetition, so that among a certain class of people this bird has come to be regarded as an enemy and injurious to all fishing preserves and hatcheries.

As is frequently the case where the food of a bird is concerned, careful observation and investigation do not bear out or even lend any support to the views just mentioned. Indeed, one can scarcely imagine any other factor that would remove so many enemies of fish ova and fry with so little injury.

Unfortunately, once a bird is given a bad name, it is difficult to clear its character, and writers who should know better persist in repeating the inaccurate stories as to the number of fish destroyed, etc. The ultimate result of all this condemnation is that in many parts of the country the Kingfisher is shot down mercilessly, and is slowly but surely becoming rarer, much to the detriment of all trout streams.

IV. *Examination of Old Nests and Pellets.*

1. *Nest Contents.*—An examination of one hundred and twenty nest-contents shows them to consist entirely of animal remains, of which fish constitutes 59·5 per cent.,

injurious insects 15·5 per cent., neutral insects 4·5 per cent., crustacea 6·5 per cent., molluscs 5·5 per cent., tadpoles 4·0 per cent., worms 1·5 per cent., and miscellaneous animal matter 3·0 per cent.

The lightest nest-content weighed 12·5 grains and the heaviest 320 grains, the average being 142 grains. In all probability the heavier ones represent the contents accumulated over more than one season, but on this point I have no definite information.

Of the 59·5 per cent. of fish, minnows constituted 39·5 per cent., stickleback 31·0 per cent., gudgeon 14·5 per cent., trout 12·5 per cent., and 2·5 per cent. of unidentifiable fish-remains.

2. *Pellets*.—The average weight of the pellets was 15 grains. The analysis of the fifty-three specimens shows that they consist wholly of animal matter of which fish constitutes 59·0 per cent., injurious insects 15·0 per cent., crustacea 6·0 per cent., tadpoles 5·5 per cent., molluscs 5·0 per cent., neutral insects 5·0 per cent., worms 1·5 per cent., and miscellaneous animal matter 3·0 per cent.

V. *Examination of Stomach Contents.*

Practically all the stomachs examined were full. The average weight of the contents was 32·5 grains. Only twenty-seven stomachs have been examined. It was evident at a very early stage of this inquiry that the pellets and nest-contents afforded a very valuable source of information, and one which was in close agreement with the results obtained from the post-mortem examinations. It was, therefore, not thought desirable to destroy a large number of birds for the purpose of examining the stomach-contents. Many of those examined have been kindly sent to me by taxidermists, to whom the birds had been sent or brought to be set up.

1. *Nature of the Food*.—An examination of the stomach-contents shows that the whole of the food consists of animal matter. Specimens have been examined in all the months of the year excepting May, June, and December.

Unfortunately, I have not been able to obtain any birds feeding on river estuaries or near to the coast.

Analysis shows that of the total bulk of food consumed, fish of various kinds forms the major portion, viz., 63·5 per cent.; injurious insects, either adult or in their larval condition, form the next largest item, viz., 16·5 per cent., neutral insects constitute 6·0 per cent., molluscs 4·0 per cent., tadpoles and crustacea each 3·5 per cent., worms 1·5 per cent., and miscellaneous animal matter 1·5 per cent.

Only two items call for special remark, viz., the fish and the injurious insects.

A reference to Table II. showing the monthly percentages shows that fish-remains were present in the stomachs collected in every month; the highest percentage was taken

TABLE II.—Showing the monthly percentages of the food items of the adult Kingfisher.

	Jan.	Feb.	Mch.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Averages.
Fish	80·5	75·0	63·5	41·5	...	...	49·5	54·5	59·5	67·0	80·5	...	63·5
Tadpoles .	...	3·5	8·0	12·5	...	...	6·5	1·0	...	...	...	...	3·5
Molluscs .	2·5	4·0	2·5	1·5	...	...	2·5	4·5	6·5	7·5	4·5	...	4·0
Injurious Insects .	8·5	10·5	16·5	27·5	...	...	22·0	22·0	20·0	13·5	8·0	...	16·5
Neutral Insects .	1·0	3·0	4·5	11·5	...	...	10·5	9·0	6·5	5·5	2·5	...	6·0
Crustacea.	6·0	3·5	2·0	2·5	...	...	4·0	3·5	3·5	3·5	3·0	...	3·5
Worms ...	·5	·5	1·5	1·0	...	...	2·5	3·5	1·5	1·5	1·0	...	1·5
Miscell. ...	1·0	...	1·5	2·0	...	...	2·5	2·0	2·5	1·5	·5	...	1·5
Totals ...	100·0	100·0	100·0	100·0	...	...	100·0	100·0	100·0	100·0	100·0	...	100·0

in November and January, 80·5 per cent. in each month, and the lowest percentage in April, 41·5 per cent. It is significant that in the months when there are no fry or ova about, the percentage stands the highest; thus we have 75·0 per cent. in February, 67·0 per cent. in October, 63·0 per cent. in March, 59·5 per cent. in September, and 54·5 per cent. in August.

Tadpoles or very young frogs were present during five months, and the remaining food items occurred in each month.

The highest percentage of injurious insects was found in April, viz., 27·5 per cent., and the lowest, 8·0 per cent., in November. From observations made in the open this item was thought to be considerable, but the large percentage found from February to October was somewhat surprising. The species consist very largely of those that are classed as injurious because, either in their adult or larval condition, they feed upon fish ova and the fry, such for instance as the Dragon-fly (*Aeschna cyanea* Müll.), and all the species of Coleoptera.

Table III. shows the different percentages side by side of the food items obtained from the stomach-contents and the nest-contents and pellets, and the averages.

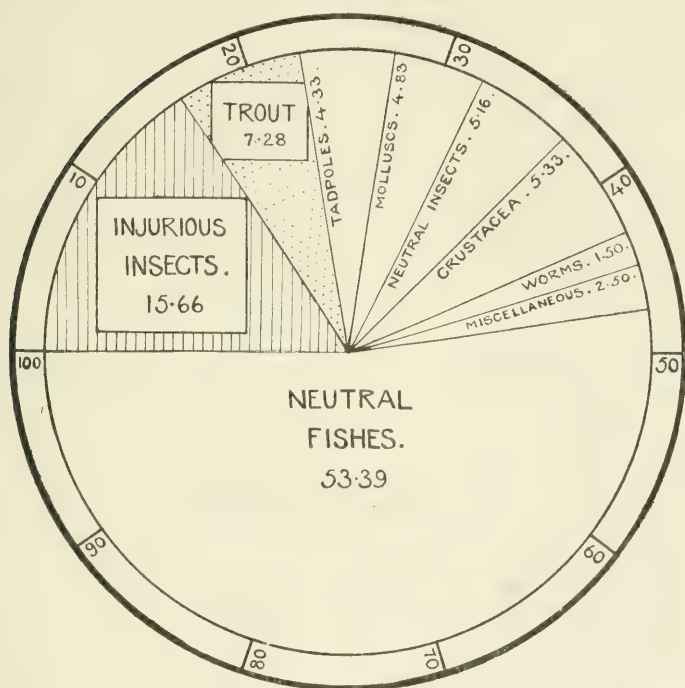
TABLE III. — Showing percentages and averages of the different food items found in (i.) the nest-contents, (ii.) the pellets, and (iii.) the stomachs.

Food item.	Nest Contents.	Pellets.	Stomachs.	Averages.
Fish	59·5	59·0	63·5	60·67
Tadpoles	4·0	5·5	3·5	4·33
Molluscs	5·5	5·0	4·0	4·83
Injurious Insects	15·5	15·0	16·5	15·66
Neutral Insects	4·5	5·0	6·0	5·16
Crustacea	6·5	6·0	3·5	5·33
Worms	1·5	1·5	1·5	1·50
Miscellaneous	3·0	3·0	1·5	2·50
Totals	100·0	100·0	100·0	99·98

Of the various species of fish four only could be identified. The minnow forms the chief item, totalling 39·0 per cent. of the total fish-content, the stickleback approaches this very closely with 32·0 per cent., then we have 15·0 per cent. of gudgeon and 13·0 per cent. of trout; the unidentifiable fish-remains were 1·0 per cent.

In view of all that has been laid to the charge of this bird, and especially its destruction of trout, the figures here given are worthy of very careful consideration. Moreover, it is important to note that in none of the stomachs was any trace of fish ova found.

Text-fig. 2.



The portion shaded by longitudinal lines represents food that it is beneficial the bird should eat; that stippled, food that it is injurious it should eat; and the blank portions food of a neutral nature.

Summarizing these figures, we find that 77.04 per cent. of the food is of a neutral nature, 15.66 per cent. is beneficial, and only 7.28 per cent. injurious (text-fig. 2).

If the estimate were taken upon only a local record, the injuries might possibly be shown to be greater, but estimated

upon the records from a number of districts there can be no doubt as to the economic status of this bird. The benefits it confers are twice as great as the injuries it inflicts, whilst the bulk of its food is of a neutral nature.

2. Classified List of the Food.

Amphibia.	Coleoptera.
Tadpoles and young frogs.	Large Water Beetle (<i>Dytiscus marginalis</i> Linn.).
Fishes.	Great Water Beetle (<i>Hydrophilus piceus</i> Linn.).
Minnow.	Small Water Beetle (<i>Hydrobius fuscipes</i> Linn.).
Stickleback.	Whirligig Beetle (<i>Gyrinus natator</i> Scop.).
Gudgeon.	Trichoptera.
Trout.	Caddis-flies, various species.
Mollusca.	Lepidoptera.
<i>Limnæa stagnalis</i> Linn.	Noctuid larvæ.
— <i>palustris</i> Müll.	Diptera.
— <i>auricularia</i> Linn.	River Sand-fly (<i>Simulium</i> sp.).
— <i>percyra</i> Müll.	Harlequin-fly (<i>Chironomus</i> spp.).
<i>Planorbis</i> sp.	Phantom Larvæ (<i>Corethra plumicornis</i> Fabr.).
Crustacea.	Gnat (<i>Culex nemorosus</i> Mg.).
Crayfish (<i>Astacus pallipes</i> Lereb.).	Annelida.
Freshwater Shrimp (<i>Gammarus pulex</i> Linn.).	Oligochæta.
Insecta.	Earthworm (<i>Lumbricus</i> sp.) and cocoons.
Hemiptera.	Red-worms (<i>Tubifex rivulorum</i> Müll.).
Water Boatman (<i>Notonecta glauca</i> Linn.).	Hirudinea.
Plectoptera.	Small Pond Leech (<i>Nephele vulgaris</i> Linn.).
Mayfly (<i>Ephemera vulgata</i> Linn.).	
Odonata.	
Dragon-fly (<i>Æschna cyanea</i> Müll.).	
Neuroptera.	
Alder-fly (<i>Sialis lutarius</i> Linn.).	

VI. Summary and Conclusion.

An examination of the contents of one hundred and twenty nests, fifty-three pellets, and the stomach-contents of twenty-seven Kingfishers, shows that the bulk of this bird's food consists of fish.

The species which go to form the total of 60·67 per cent. consist almost entirely of neutral species, 7·28 per cent. only consisting of trout.

The highest percentage of fish is consumed in the months of October, November, January, February, and March, and the lowest in April.

Insects, most of which are injurious to trout, constitute 15·66 per cent. of the total bulk of food, and the highest percentage is taken in the spring (March, April, and June), so that much of this material consists of voracious larvæ, most of which occasion a large amount of damage to fish ova and fry.

Only 5·33 per cent. of crustacea are taken, most of which are referable to *Gammarus pulex*, which species I am informed attacks the eggs of fishes. The consumption of worms and molluscs is only small.

A summary of the percentages of the various food items shows that 77·4 per cent. of the food is of a neutral nature, 15·66 per cent. is beneficial, and only 7·28 per cent. is injurious.

It is obvious, after considering the results obtained in this investigation, that the pisciculturist is grossly mistaken as to the economic position of the Kingfisher, and that despite the small percentage of trout that it destroys, it is really a very beneficial bird in that it destroys a much larger percentage of acknowledged enemies. Moreover, the little damage it occasions is not altogether beyond prevention.

In view of these results it is sincerely to be hoped that very strict and rigorous protection will be afforded this bird for the future. A clause in any new Act of Parliament affecting wild birds, making it an offence to stuff or set up specimens of the Kingfisher, excepting under a permit, would certainly tend to reduce the present senseless destruction.

Bibliography.

1. BUTLER, A. G.—British Birds, with their Nests and Eggs. London, 1896 : vols. i.-vi.
 2. COCKS, A. H.—“Destruction of Kingfishers.” *The Zoologist*, (3) vol. xv. 1891, p. 154.
 3. COLLINGE, WALTER E.—“On the Value of the Different Methods of Estimating the Stomach Contents of Wild Birds.” *Scot. Nat.* 1918, pp. 103-108, 2 figs.
 4. FORBUSH, E. H.—Useful Birds and their Protection. Boston, 1907, pp. xx + 437 ; lvi pls. & 171 figs.
 5. JOURDAIN, F. C. R., & WITHERBY, H. F.—“The Effect of the Winter of 1916-1917 on our Resident Birds.” *Brit. Birds*, vol. xi. 1918, pp. 266-271 ; vol. xii. pp. 26-35.
 6. KERR, HELEN M. RAIT.—“Field Notes on the Kingfisher.” *Ibid.* pp. 36-38.
 7. MASON, C. W.—“The Food of Birds in India.” *Mem. Dept. Agric. India, Entom. Ser.*, 1912, vol. iii. pp. 1-371.
 8. NEWSTEAD, R.—“The Food of Some British Birds.” *Suppl. Journ. Bd. Agric.* vol. xv. 1908, pp. viii + 57.
 9. ROWAN, W.—“Notes on the Kingfisher (*Alcedo ispida*).” *Brit. Birds*, vol. xi. 1918, pp. 218-225.
 10. YARRELL, WILLIAM.—A History of British Birds. London, vols. i.-iv., 1871-1874.
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VIII.—*Obituary.*

SIR JOHN ARTHUR BROOKE, Bt.

Sir John Arthur Brooke of Fenay Hall, Huddersfield, Yorks, who died on 12 July last, was a prominent man of business in the north and a Director of Messrs. John Brooke & Sons, Limited, worsted manufacturers, Huddersfield.

Sir John Brooke was born in 1844, and was the fourth son of the late Thomas Brooke. He was educated at Repton and Oriel College, Oxford, graduated B.A. in 1865, and was created a Baronet in 1919. His chief interests were in his business and in politics, and he was for many

years chairman of the Huddersfield Conservative Association. He was elected a member of the Union in 1898, but his interest in ornithology was purely that of an amateur. He was a keen observer of bird-life, and had made in his younger days a very fine collection of British Birds' eggs. He was also a collector of books on all subjects relating to ornithology and natural history.

GEORGE WYMAN BURY.

The ornithological exploration of south-western Arabia must always be associated with the name of Lieut. G. Wyman Bury, R.N.V.R., whose recent death at Helouan, near Cairo, at the age of 46, we regret to learn from the pages of the 'Times.'

Bury was born at Mancetter Manor House in Warwickshire, and was educated at Atherstone Grammar School and at Army crammers. In 1894 he received a commission in the 3rd Batt. R. Warwick Regt.; in the following year he was in southern Morocco with the rebel tribes. During the next six or seven years he was in the Aden hinterland and other parts of southern Arabia, making archæological and zoological investigations and acquiring a wonderful knowledge of the Arab tribes. He was political officer at Aden in 1903-4. On the outbreak of the war he joined the Intelligence Staff on the Egyptian front, and later on was attached to the Red Sea Patrol.

His first ornithological collections were made in 1899-1900, when he was attached to the expedition under the leadership of Messrs. W. Dodson and A. B. Percival for the exploration of the hinterland of Aden, the results of which were worked out by Mr. Ogilvie-Grant and published in '*Novitates Zoologicæ*' (vol. vii. 1900, pp. 243-266). Further collections of birds were made by him in the following year when attached to an Austrian expedition which visited south-eastern Arabia for archæological investigation. The account of the birds then collected was published in the '*Journ. für Ornithologie*' of 1901 by Messrs. L. von Lorentz and C. E. Hellmayr.

In 1905 Mr. Bury, at the instigation and with the assistance of Mr. Ogilvie-Grant, made a collecting expedition to Somaliland, but was unable on account of political difficulties to reach the high ranges behind Cape Guardafui as he had intended. The Somaliland collection was worked out by Mr. Bannerman ('Ibis,' 1910, p. 291). Finally, in 1912-13 Mr. Bury explored the Yemen country of south-east Arabia, never previously visited by an ornithologist and even by very few Europeans. The collection of birds was worked out by Mr. W. L. Selater ('Ibis,' 1917, pp. 129-186).

Mr. Bury published an amusing account of his travels in Yemen under the title 'Arabia Infelix' in 1915. He was also the author of 'The Land of Uz,' 1911, and 'Pan-Islam.' He leaves a widow but no children. He was never a Member of the Union.

WILLIAM DUTCHER.

From the last number of the 'Auk' we learn that Mr. Wm. Dutcher, President of the National Association of Audubon Societies for the Protection of Wild Birds and Animals, died on the 1st of July at his home in Chevy Chase, near Washington, in the seventy-fifth year of his age.

To Mr. Dutcher, more than any other individual, is due the present interest in wild bird conservation in America, the organization and development of the National Association of Audubon Societies, of which he was President from the time of its conception until his death, and the manifold activities which have grown out of this organization.

In his young days Mr. Dutcher was an active field-student, working in Long Island, and he published many important papers on the birds of that region, besides forming a valuable collection, which is now at New York in the American Museum of Natural History.

Later on he was elected Chairman of the A. O. U. Committee on Bird-Protection, the work of which was eventually taken over by the National Association of the Audubon Societies. This great institution is the federal bond linking together

the Audubon Societies in each State of the Union, and is besides, through the energy and enthusiasm of its President, possessed of ample means, which are devoted to the maintenance of special bird-reserves, to work among the schools and school-children, and to propaganda and the guiding of the legislatures in the various States of the Union in regard to the protection and conservation of wild life.

Mr. Dutcher was a Fellow of the American Ornithologists' Union and a Member of their Council.

ROBERT ETHERIDGE.

Mr. Robert Etheridge, the son of the distinguished geologist and paleontologist of the same name, died after a short attack of pneumonia at Colo Vale, near Sydney, on the 4th of January of last year. He was elected a Member of the Union in 1914.

Born in 1847 in England, he early took up geological work in Australia in the middle sixties. He returned to England and was for a short time, together with his father, on the staff of the Geological Department of the Natural History Museum. In 1887 he went back to Australia as paleontologist to the Geological Survey of New South Wales and to the Australian Museum at Sydney, of which latter institution he subsequently became Director. His scientific work and publications were, we believe, entirely concerned with geology and paleontology, and his interest in ornithology was purely that of an amateur.

JOHN GERRARD.

John Gerrard, F.G.S., M.B.O.U., who died at the age of 70 at his residence at Worsley, Lancashire, on 28 July last, was born at Ince Hall in the heart of the Lancashire colliery district, and inherited from his father, a mining engineer, some of the gifts which proved so useful during his long life of practical experiment and investigation. He was educated at Wigan Grammar School, and entered the service first of the Ince Hall and then of the St. Helens

collieries, but at the age of 23 he was appointed an Assistant Inspector of Mines. In 1893 he became Chief Inspector for the Manchester and Irish areas, and held this post until 1914. Perhaps his most important scientific work was his investigation of the causes of coal-dust explosions ; after the terrible explosion at the Pretoria pit he was amongst the first who descended to the rescue.

His interests, however, were not confined to engineering or geology, although he was one of the leading geologists in the North. He was keenly interested in ornithology and certain branches of entomology, and during trips to the west coast of Scotland, the Orkney, Shetland, and Faroe Islands, he accumulated interesting collections of birds and eggs, which, through the kindness of his sister, Miss E. M. Gerrard, have found a home in the Wigan Mining and Technical College. He supported any movement which he considered would further science ; thus he was a member of the Yorkshire Naturalists' Union, and for many years served on the Committee of the Manchester Museum. He was elected a member of the British Ornithologists' Union in 1892.

He was always genial, always sympathetic, and his advice when sought was willingly given and sound.—T. A. C.

CHARLES WILLIAM SHEPPARD.

We regret to have to record the death on the 20th of September last of one of the oldest Members of the Union—the Rev. Chas. William Sheppard—at the age of 84. He was elected a Member of the Union in 1863, Canon Tristram being his proposer. He had been rector of Trottescliffe, near Maidstone, in Kent since 1875.

Mr. Sheppard was born at Trottescliffe Rectory in 1838, where his father, the Rev. Edward John Sheppard, was rector before him from 1827 to 1875 ; so that father and son held the same benefice for over 90 years. He was educated at Merchant Taylors' School (then in Thames Street) and also at Charterhouse, and subsequently at Trinity College,

Cambridge, where he took his degree of B.A. in 1861 and M.A. in 1864. He was ordained in 1870, and acted as his father's curate for four years before succeeding him in the living which was his only cure.

His interest in Natural History was very considerable, and in his younger days, accompanied by Mr. Upcher and the late Mr. G. G. Fowler, of Gunton Hall, who was for many years a Member of the Union, he made an excursion to Iceland, and visited the north-western peninsula, a portion of the island not previously explored by any English traveller. The results of this visit, both ornithological and otherwise, are related in a little book, 'The North-west Peninsula of Iceland,' published in 1867 (see 'Ibis,' 1867, p. 239).

Mr. Sheppard and Mr. Upcher subsequently accompanied Canon Tristram to Palestine in 1864-5, and the results of that expedition will be found recounted in the pages of 'The Ibis' for 1865 and onwards, where Mr. Sheppard's name is often mentioned.

The only other ornithological publication with which Mr. Sheppard's name is connected is 'Notes on the Birds of Kent,' published in 1907, in which he collaborated with Messrs. R. J. Balston and E. Bartlett.

Mr. Sheppard had a fine collection of Ducks, both British and foreign, the foundation of which was made during his visit to Iceland. For nearly half a century he had been the father of his parish, and was greatly respected and beloved by all the people of his neighbourhood, though he was not perhaps so well known among the younger ornithologists of to-day as he deserved to be.

HERBERT HUNTINGTON SMITH.

Mr. Smith, who met with his death through a railway accident on the 22nd of March, 1919, at Tuscaloosa, Alabama, U.S.A., was Curator of the Alabama Museum of Natural History, and one of the earliest and most experienced of American field-naturalists.

Between 1881 and 1886 Mr. Smith, accompanied by his

wife, who was his constant companion and herself a first-rate collector, was in the vicinity of Chapada and Cuyuba, in the Province of Matto Grosso in Brazil. The large collection of birds secured in that region is now divided between the British Museum and the American Museum of Natural History. In 1889 the Smiths collected in Mexico for Mr. Godman, who was then amassing material for the 'Biologia Centrali-Americana.' From 1890 to 1895 they were in the West Indies, in the interests of the West Indian Committee of the Royal Society and British Association. Later he collected in Colombia for the Carnegie Museum. Here, however, he became so seriously ill that he had to give up all further work in the Tropics.

A sketch of his life by Dr. W. J. Holland will be found in 'Science' (vol. xlix. 1919, pp. 481-483).

IX.—*Notices of recent Ornithological Publications.*

Cory's Catalogue of American Birds.

[Catalogue of Birds of the Americas and the adjacent Islands in the Field Museum of Natural History. By Charles B. Cory. Pt. ii. no. 2. Families Trogonidæ, Cuculidæ, Capitonidæ, Rhamphastidæ, Galbulidæ, Bucconidæ, and Picidæ. Pp. 317-607, 1 col. pl. Field Museum of Natural History Publication no. 203, Zool. ser. vol. xiii. Chicago, U.S.A., Dec. 31, 1919.]

The second part of Mr. Cory's Catalogue of the Birds of the Americas contains the lists of the species of the remaining families of Picarian birds left over from Part I. published in 1918 and reviewed in 'The Ibis' (1918, p. 500). The present part follows the lines of the previous one, and contains descriptions of all those species not mentioned in the Catalogue of the Birds in the British Museum or in Ridgway's 'Birds of North and Middle America.' We are very glad to see a great improvement in the proof-reading, and have hardly noticed any of the misprints which disfigured the first part.

We have found descriptions of about seven new species and subspecies in the text, and it would be a great convenience to workers if a list of these were printed in the introduction. They are as follows :—*Coccyzus minor caymanensis* Cayman Is., W.I., *Nystalus maculatus nuchalis* Ceara, Brazil, *Soroplexa campestris cearæ* Ceara, Brazil, *Chrysoptilus melanochlorus juæ* Ceara, Brazil, *C. punctigula notata* Colombia, *Celeus elegans approximans* Brazil, *Crocomorphus flavus peruvianus* N. Peru. A coloured plate of the three subspecies of *Celeus elegans* forms a frontispiece to the volume.

Cory on the genus Rhynchocyclus.

[The relationships and geographical distribution of the species and races belonging to the genus *Rhynchocyclus*. By C. B. Cory. Proc. Biol. Soc. Washington, vol. 32, 1919, pp. 217-224.]

A useful revision of this complicated and extensive genus of South American Tyrant-birds. No new forms are described, twenty are included in the list.

Hellmayr's recent papers.

1. Neue Vögel aus dem tropischen Amerika. Von E. C. Hellmayr und Josef Graf von Seilern. Verhandl. Orn. Ges. Bayern, xii. 1914, pp. 87-92.
2. Weitere neue Formen aus Westindien und Venezuela. Id., ibid. pp. 201-205.
3. Ueber einen neuen Kernbeisser aus Venezuela. Id., ibid. pp. 160-161.
4. Ein kleiner Beitrag zur Ornithologie des Staates Espirito Santo, Sudostbrasilien. Von C. E. Hellmayr. Ibid. pp. 119-159.
5. Neue Formen aus dem neotropischen Gebiet. Id., ibid. pp. 206-214.
6. Beschreibung von sechs neuen neotropischen Vögelformen, nebst einer Bemerkung über *Ampelion cinctus* (Tsch.). Id., ibid. xiii. 1917, pp. 106-119.
7. Miscellanea Ornithologica, II., III., IV. Id., ibid. xiii. 1917 & 1918, pp. 188-200, 302-317; xiv. 1919, pp. 126-133.
8. Bibliographisches und Kritisches über R. Schomburgk's Vögel von Britisch-Guiana. Id., ibid. xiv. 1920, pp. 270-274.
9. Drei Beiträge zur Nomenklatur der Vögel Europas. Id., ibid. xiii. 1917, pp. 87-104.
10. Zur Nomenklatur zweier paläarktischen Krahnen. Id., ibid. xiii. 1917, pp. 181-187.

11. Hans Graf von Berlepsch—Eine Lebensskizze. Id., Journ. Ornith. 1915, pp. 557-568, portrait.
12. Description of a new Formicarian Bird from Colombia, by E. Hellmayr and Dr. J. v. Madarasz. *Aquila*, xii. 1914, p. 88.
13. Nomenclator der Vögel Bayerns. Von C. E. Hellmayr und H. Laubmann. Pp. i-viii+1-68. München (G. Fischer). 8vo.

We have recently received from Dr. Hellmayr a set of his publications during the war period, and the importance and accuracy of his work demands this somewhat long notice. The first eight of the papers listed contain descriptions of new species and subspecies of Neotropical birds, and for the enumeration of these we must refer our readers to the 'Zoological Record,' in which the new forms are duly recorded. In the paper numbered 6, a new Andean Jay is characterized under the name *Cyanolyca viridicyanea cyanolæma*. This is obviously identical with the bird named and figured by Mr. W. L. Slater in the October number of 'The Ibis' of the same year, 1917 (p. 465, pl. viii.), and Hellmayr's name, having been published in February, must take precedence. Another nomenclatural clash is in regard to the Fan-tailed Raven of north-eastern Africa, *Corvus affinis* Rüpp. *nec* Shaw, which therefore requires a new name. Dr. Hartert renamed it *C. rhipidurus* in the 'Bulletin' of the B. O. Club, published Nov. 30, 1918; Hellmayr renamed it *Corvus brachycercus* in his Miscel. Orn. iv., published June 1919.

In the ninth paper on our list Dr. Hellmayr criticises three recently published check-lists of European birds: our own B. O. U. list, to which he gives a good deal of praise; that of Reichenow and Hesse (published in the 'Journal für Ornithologie' for 1916) of German birds, which meets with scant approval as being reactionary; and, finally, a Swiss list, published at Berne in 1915 and compiled by Th. Studer and G. von Burg. The 13th item on the list is Dr. Hellmayr's own contribution to the check-lists, and a comparison of the names used by him in his Bavarian list with those of the B. O. U. list shows that there are but few points of disagreement between them.

Hingston's Himalayan observations.

[A Naturalist in Himalaya. By R. W. G. Hingston, M.C., M.B., I.M.S. Pp. xii+300; 24 illustr.; 1 map. London (Witherby), 1920. 8vo.]

Captain Hingston is a close observer of nature, and has had the good fortune to be stationed in an interesting and little-known valley of the Himalayan range. This valley, the British territory of Hazara, runs in the form of a wedge between the native state of Kashmir and the territory of the independent Afghan tribes of the Black Mountain.

Our previous knowledge of the birds of this area is due to the late Major C. H. T. Whitehead, who spent a short time at Kagan, in the upper part of the district, and contributed a few notes on his visit to 'The Ibis' and 'Journal of the Bombay Natural History Society.'

Through Hazara apparently a big stream of migration passes in spring and autumn, and it is to be regretted, from the point of view of readers of this Journal, that Captain Hingston did not pay as much attention to birds as he did to ants and spiders. True, he gives us a good picture of the local migration from the plains of the Punjab to the lower valleys and hills of Hazara, but this is only a general sketch with practically no details.

Like many of us, Captain Hingston has been fascinated by the soaring of birds, and has made a special study of it. His remarks on the soaring of the Common Kite, or was it not rather *Milvus melanotis*, which take up nearly the whole of the single chapter on "Ornithological Observations," will be read with interest. The book is illustrated with a number of good photographs, including one of a male Paradise Flycatcher in fully-adult plumage.

Howard on Bird Territories.

[Territory in Bird-Life. By H. Eliot Howard. With illustrations by G. E. Lodge and H. Grönvold. Pp. xiv+308; 11 illustr.; 2 plans. London (Murray), 1920. 8vo. Price 21s.]

Most of our readers will remember Mr. Howard's beautiful

book on the British Warblers and of the theory which he first promulgated in that work of bird-territories and of the great importance of exclusive possession of a tract of land in bird-life. In this new work he has developed his views, and he endeavours to prove that the struggles and battles of male birds in spring are due, not so much to contention for the possession of mates as for the possession of tracts of land or estates to provide hunting-grounds from which to secure food for the young brood.

This new volume is of great interest, and if the author's conclusions are correct has a most important bearing on many biological problems. We hope to present to our readers a more extended and critical notice of it in the next number of 'The Ibis.'

Laubmann on the Kingfisher.

[Beiträge zur Kenntnis des Formenkreises *Alcedo atthis*. Von Dr. A. Laubmann. Arch. Naturges. Berlin, vol. 84, pt. A, 1920, pp. 43-82.]

Dr. Laubmann's paper deals with the subspecies of the bird which we have hitherto called *Alcedo ispida*; but owing to the fact that Linnæus described the Egyptian Kingfisher six pages before the familiar *A. ispida* under the title of *Gracula atthis*, the latter name must become the specific name of our familiar British bird. As, however, the British bird is subspecifically distinct from the Egyptian, we can retain the name *Alcedo atthis ispida* for our own form.

Dr. Laubmann has added another terror to systematic ornithology by making use of four names instead of three, and that something which comes between the species and the subspecies he calls a "formengruppe." According to this system our bird becomes *Alcedo atthis atthis ispida*, the Egyptian *A. atthis atthis atthis*, and together with several other subspecies makes up the "formengruppe" *Alcedo atthis atthis*, while another "formengruppe" is made up of three Moluccan subspecies and is termed *Alcedo atthis hispidoides*.

The subspecific races as revised by Hartert numbered four;

to these Dr. Laubmann has added four more, two of which (*A. a. corsicana* and *A. a. formosana* from Corsica and Formosa respectively) are new. In addition, some five intermediate races are separately listed which have to be designated by no fewer than five names, i. e. *Alcedo atthis atthis atthis ispida*, an intermediate race between that of northern Europe and Corsica which occurs in northern Italy.

We fear Dr. Laubmann's quadrinomial system is too heavy a burden for the already harassed ornithologist to carry, and we shall be interested to see whether it is adopted, even among the more advanced systematists.

The paper contains a good historical review of the Kingfisher's systematic history, and paragraphs on individual and geographical variation and on the phylogeny of the group.

Lönnerberg on the Birds of Juan Fernandez and Easter Islands.

[The Birds of the Juan Fernandez Islands and Notes on Birds from Easter Island. By Prof. Dr. Einar Lönnerberg. Extracted from 'The Natural History of Juan Fernandez and Easter Island,' edited by Dr. Carl Skottsberg. Vol. iii. : pp. 1-24 (separately paged).]

This is an account of the birds collected during the Swedish Pacific Expedition in 1916-17 under the direction of Dr. Carl Skottsberg. Mr. Kåre Bäckström was the zoologist of the expedition, and has furnished some interesting notes and observations on the birds obtained.

The Juan Fernandez Islands are two in number—Masatierra and Masafuera, the former being the island always associated with Defoe's 'Robinson Crusoe.' They are over 100 miles apart, and lie in the southern Pacific, some 400 miles from the coast of Chile. There are eight species of indigenous land-birds out of a total bird population of about 30 species. These are all listed by Dr. Lönnerberg with some interesting comments on their status and habits. *Cinclodes oustaleti baeckstroemii* and *Pterodroma cooki masafuerae* are described as new, and a photograph of the nest of the indigenous and peculiar Humming-bird (*Eustephanus fernandensis*) taken by Dr. Skottsberg is reproduced.

The expedition stayed on Easter Island only a short time, and the collections thence are not so complete. There are said to be twelve species inhabiting the island. Of these, examples of six were obtained, all sea birds. *Procelsterna cærulea skottsbergii* and *Pterodroma heraldica pasche* are described as new.

It is interesting to note that the holy bird of the Easter Islands, about which Mrs. Routledge has written ('The Mystery of Easter Island,' London, 1919) and which is called locally "Mauntara," is identified by Mr. Bäckström as *Sterna lunata* Peale, while Mrs. Routledge believes it to be the Dusky Tern, *Anous stolidus unicolor*.

McClymont's Ornithological Essays.

[Essays on early Ornithology and kindred subjects. By James R. McClymont. Pp. 1-34; 3 plates. London (Quaritch), 1920. Sm. 4to.]

In this little work Mr. McClymont endeavours to identify the birds mentioned in some of the old travellers' narratives, a fascinating task, though often difficult to bring to a satisfactory conclusion. His first attempt is to identify Marco Polo's "Rukh," a bird said to have an expanse of wing of thirty paces. This he frankly gives up in despair.

The birds met with during the first voyage of Vasco da Gama to India are perhaps less fanciful. Penguins still exist on the coasts of South Africa in very considerable numbers, as well as seals or, rather, sea-lions (*Arctocephalus pusillus*), though the latter are stated by our author to be no longer denizens of those regions. A reference to the volume on Mammals in the 'Fauna of South Africa' would have put this matter right. Other essays deal with the early voyages to the Banda or Spice Islands and to Western Australia and New Zealand.

We would suggest that the diving bird "plougeon," met with by Crozet on the island, since named Marion Island, in the southern Indian Ocean, is the Diving Petrel, *Pelecanoides exul*, a species which is very abundant in those waters.

It is interesting to find that the earliest use of the name Emu in English occurs in 'Purchas his pilgrimes,' where the bird is stated to occur on Banda Island in the Molucca group. The bird referred to was probably a Cassowary, which had been brought to Banda from Ceram. Skeat and the New English Dictionary state that Eme or Ema (whence Emu) is a Portuguese word for an Ostrich or Crane, but Mr. McClymont believes that the derivation is from "neâma," an Arabic name for the Cassowary, distorted by the Portuguese into "uma ema" and thence into Emu.

The volume is illustrated by three well-produced plates in black and white, and is a beautiful example of book-making.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. viii. pts. 3 & 4, pp. 145-214, pls. 382-394. London (Witherby), Aug. & Oct. 1920. 4to.]

In these two parts Mr. Mathews continues his account of the Muscicapidæ with the genera *Ethelornis*, *Pseudogerygone*, *Iredaleornis*, *Percilodryas*, *Tregellasia*, *Kempiella*, *Pachycephala*, and *Lewinornis*.

This family has always been a source of trouble, as it has sometimes been included in the Turdidæ, while certain genera have been referred to the Laniidæ, as for instance *Pachycephala*.

Ethelornis was formed by Mr. Mathews to contain most of Sharpe's species of *Pseudogerygone*; they are comparatively large-billed, and all the nine members are of modest coloration. They are largely found in mangrove-swamps, but the habits of the various forms, both in this genus and its nearest neighbours, are but little known, except in the aggregate. Two subspecies are recognised.

E. cairnsensis is now raised to specific rank; it is *brunneipectus* of Sharpe, from Australia, but not New Guinea. Here again there are two subspecies, one (*robini*) being new. *E. tenebrosus* has three subspecies, of which one (*whitlocki*) was formerly referred in error by Mr. Mathews to

magnirostris. *E. chloronotus* has also three subspecies. *E. lævigaster* is restricted to the north-west and Northern Territory west of the Roper River, *cantator*, *mouki*, and *mastersi* being now considered full species. *E. lævigaster* has two new subspecies out of four, while *mastersi* has a couple and *cantator* has one that is new. *E. fuscus* proving to be the same as *E. culicivorus*, both of Gould, the former name has priority, and six subspecies are admitted.

The yellow-breasted, black-throated *Pseudogerygone palpebrosa* is allowed to stand in a separate genus, with three Australian and two New Guinean subspecies—on considerations of colour.

Very different is that fine bird, *Iredaleornis cinereifrons*, of the Cardwell district, which has a near ally (*armiti*) in Papua.

The *Pacilodryas* series is divided, and *Leucophanes* is kept; while *Plesiodryas* is founded as a new genus for *Megalestes* of Salvadori, *Papualestes* for *Myiolestes cyanus* of that author, *Gemæodryas* for *Eopsaltria placens* of Ramsay, not to mention *Tregellasia* and other forms.

Pacilodryas superciliosa has two subspecies, *P. cerviniventris* four, *Tregellasia capito* three, *T. leucops* two, but the type-species is extralimital.

It will be remembered that the name *Kempiella kempi* was bestowed in 1913 by the author on a new bird from Cape York, of which little is yet known.

The Thickheads are an interesting series of Australian forms, well known for their fine songs and lively coloration. Three species are recognised of the yellow-breasted forms, *Pachycephala pectoralis*, *P. robusta*, and *P. melanura* with eleven, six, and two subspecies respectively, of which *P. r. intercedens* is new, as are *P. p. bettingtoni*, *myponga*, and *interjecta*.

The Rufous-breasted Thickhead is still called *Lewinornis*, and *L. rufiventris* has several subspecies, which will be tabulated in the next part.

Since Watling in his drawings figured *P. pectoralis* and Latham described it, there has been terrible confusion in

the genus, as will be seen by reading p. 216; while Mr. Mathews will doubtless wish us to emphasize his regrouping, which has the coloration of the female as a distinctive feature.

Mullens, Swann, and Jourdain's Bibliography.

[A Geographical Bibliography of British Ornithology from the earliest times to the end of 1918, arranged under counties. By W. H. Mullens, H. Kirke Swann, and Rev. F. C. R. Jourdain. Pts. 4-6, pp. 289-558 (completed). London (Witherby), 1920. 8vo.]

On the conclusion of this most useful piece of work, for which all British ornithologists must feel grateful to the authors, it is our pleasant duty to congratulate them on its completeness and accuracy. We have been carefully through the pages, and find little to suggest in the way of alteration, should a second impression be called for. We do not like the abbreviation "s" for "shire," as Banffs for Banffshire, especially as it is not used consistently. The omission of "Co" in many Irish records would possibly have been an equal saving in printing; but this is a small matter. A very important point is the collection of records from newspapers, such as 'The Field,' and from small local periodicals; here workers will be saved an enormous amount of trouble in hunting through the annual files.

It is to be hoped that all readers will send a note to the authors of any omission; as a supplement, if not a new edition, is sure to be the outcome of this comprehensive work. So far we have noticed no such omissions.

Ogilvie on British Birds.

[Field observations on British Birds. By a Sportsman Naturalist (the late Fergus Menteith Ogilvie, M.A., M.B., etc.). Edited by Henry Balfour, M.A., with a foreword by Mrs. John Massie. Pp. xvi + 228; 6 pls.; portr.; 3 maps & 14 text-figs. London (Selwyn & Blount), 1920. 8vo.]

It is not necessary to read more than Number 1—"On some of the commoner Wading Birds"—of the eight sections into which this book is divided to realize that Mr. Ogilvie

was a remarkably close and accurate observer of bird-life, and that he was able to record his observations in a delightfully simple and charming manner.

Many interesting accounts are given of a variety of birds—the Gannet, Shag, Cormorant, Norfolk Plover, Nightjar, Stonechat, Short-eared Owl, and several Accipitrine birds are a few concerning which the author supplies information, gathered in every case at first hand. His essay on the Snipe is a really valuable contribution to ornithology; no fewer than thirty-three pages are devoted to this species, and not one line is dull reading.

In his essay on the Grey Partridge, Mr. Ogilvie pays a well-deserved compliment to Mr. Ogilvie-Grant as being the first authority to point out the plumage differences of the male and female Partridge, finally exploding the old incorrect theory, still so often held by sportsmen, that the male bird alone has a horseshoe on its breast. Mr. Ogilvie fully bears out Mr. Ogilvie-Grant's deductions, and corroboration from so careful a source is always welcome.

Both the Grey and the French Red-legged Partridge are dealt with in this article, which may be strongly recommended to future monographers of the birds in question. It is worthy of note that Mr. Ogilvie puts forward a strong plea on behalf of the "Frenchman," and anyone who has shot these sporting birds will surely endorse his views.

A chapter of peculiar economic interest, both to sportsmen and agriculturists, contains the results of the author's investigations into the food of the three Scotch game-birds—the Red Grouse, the Blackcock, and the Ptarmigan, and, incidentally, of the Cuckoo; while in a later chapter the food of some of our commoner Falconidæ is discussed.

Attention is drawn to the desirability of altering, by Act of Parliament, the opening date when Black Game may be shot from the 20th of August to the 1st of October, and correspondingly the close season commencing on the 1st of February instead of the 10th of December, as is at present the case—a change which from every point of view seems advisable.

Mr. Ogilvie's views on the Wild Birds Protection Act and the anomalies which he cites may be commended to the Standing Committee recently chosen to advise the Home Secretary on this controversial subject.

A delightful description of Mr. Ogilvie's first meeting with processionary caterpillars (*Cnethocampa pityocampa*) in southern France, though hardly within the scope of this review, serves to show that he was a naturalist whose interests were not cramped within the narrow limits of a collector's horizon.

In his chapter on Wild Geese we would specially draw attention to plates iv. and v., depicting the colours of the soft parts of *Anser cinereus* and *A. albifrons*, from coloured drawings done by the author immediately after death : the colouring there produced is admittedly different from plates usually accepted as correctly portraying the soft parts (not excepting Alphéraky's celebrated work). Mr. Ogilvie's remarks on this subject are well worthy of careful study.

That Ogilvie was a keen collector is perhaps to put it too mildly, and in this connection his carefully considered remarks on pp. 12 and 13 on the shooting or collecting of rare wanderers will provide food for reflection and some for criticism; but it must be remembered that Ogilvie made exceptionally good use of every rare bird he shot, and judged from his own standpoint, his arguments are perfectly sound. No finer working series of British Birds has ever been made, as the reviewer can testify from personal examination of the Ogilvie Collection in the British Museum.

In a book in which accuracy seems to be the keynote, it seems a pity that the Latin names occasionally employed should not, in a number of cases, have been brought up to date : for instance, on p. 107, out of four of the scientific names there mentioned, three are incorrect according to modern nomenclatural methods. An editorial note to this effect would have been a simple matter. Perhaps the editor has long since given up attempting to march with the constant changes in nomenclature to which we are subjected.

The B. O. U. List of British Birds (1915) might, however, have been consulted with advantage, if only for the sake of that uniformity which we are all striving to reach.

At the time of his death Ogilvie was engaged in writing an important ornithological work which will now, unfortunately, never be published. If his "Field Observations on British Birds" are anything to judge by, ornithology has, by the author's untimely death, been robbed of an exceptionally valuable contribution, even in these days of accurate observers and accomplished writers.

Ornithologists and sportsmen alike owe a debt of gratitude to Mr. Henry Balfour, who has edited this volume "as a tribute," we are told in the Preface, "to one whose death involved a great loss to ornithological science," how great a loss only those who read Mr. Ogilvie's book for themselves can properly appreciate.—D. A. B.

Ritchie on the Influence of Man on Animals.

[The Influence of Man on Animal Life in Scotland: A study in faunal evolution. By James Ritchie, M.A., etc. Pp. xvi+550, many illustr., and 8 maps. Cambridge (Univ. Press). 1920. Large 8vo.]

This work is based on a series of lectures delivered by the author in Aberdeen in 1917, and deals at length with the effects produced by man and his manifold works on the various forms of animal life. The author endeavours to trace the different ways in which man's power has worked and is working, and to realize to what degree a fauna of to-day owes its character and composition to his interference with nature.

For the purpose of this study a fauna of a manageable compass was necessary, and Scotland was found to be most suited to form a basis. An introduction deals with the arrival of man in Scotland, which did not take place till comparatively late, as the whole country appears to have been covered with an ice-sheet long after man inhabited the south of England, and the earliest Scots belonged to the Neolithic period of culture. Part I. deals with the deliberate interference by man with animal life under the headings

of domestication, destruction for safety, food or sport, protection, and the deliberate introduction of new animals. Part II. recounts man's indirect interference with animal life by the destruction of forest, the increase of cultivation, and other minor factors.

As regards birds, the author traces the history of the Domestic Pigeon in Scotland, and also of two ancient Scottish breeds of fowls, the Dumpy and the Scots Grey.

The history of the destruction of the larger birds of prey and the Great Auk are told with considerable detail, and of the introduction and spread of the Pheasant and Capercaillie; the gradual extension of the range of the latter is illustrated by a map.

The work is written in charming style with many quotations from the older writers and poets, and the illustrations are numerous and well chosen, and though it is on the larger mammals that the effects of man's influence has been mostly felt, it is remarkable how human civilization has affected even the less conspicuous and more humble forms of life. We can thoroughly recommend the book to ornithologists and others as full of information and interest.

Robinson and Kloss on Sumatran Birds.

[On a Collection of Birds from N.E. Sumatra. By H. C. Robinson and C. Boden Kloss. Journ. Straits Branch R. Asiatic Soc. no. 80, 1919, pp. 73-133; 1 map.]

In this paper Messrs. Robinson and Kloss deal with a collection of birds made by a Dutch planter, Heer A. C. F. A. van Heyst, in the Deli district of north-eastern Sumatra. The country in which the collection was made ranges from the mangrove forest of the coast, through the low-lying districts planted with tobacco, and thence to the central mountainous country, rising to elevations of 4000 to 5000 feet. Representatives of 242 species were obtained and four new forms are described, namely—*Macropygia ruficeps sumatranus*, *Brachylophus chlorolophus vanheysti*, *Cyornis vanheysti*, and *Buchanga leucophaea batakensis*. Four other species are recorded from Sumatra for the first time. A good

outline-map shows very clearly the exact situation of each collecting-station.

Stresemann on the Birds of Macedonia.

[Avifauna Macedonica. Die ornithologischen Ergebnisse der Forschungsreisen unternommen nach Mazedonien durch Prof. Dr. Doffein und Prof. L. Müller-Mainz in den Jahren 1917 und 1918. Von Dr. Erwin Stresemann. Pp. xxiv+270; 6 pls. München (Dultz), 1920. 8vo.]

During the occupation of the greater part of Macedonia by the German forces a Survey Commission was formed for the zoological exploration of the country, which was up to that time hardly known. Some 3258 bird-skins, representing 168 species and subspecies, were collected by Professors Doffein and Müller during a period of about sixteen months in 1917 and 1918, and these were all deposited in the State Museum at Munich.

A very full and complete report on these collections has been drawn up by Dr. Stresemann. Many of the species were collected in long series of often over 50 specimens. This has enabled him in many cases to give detailed accounts of the development of the different plumages and of the moult. There are also paragraphs on individual and geographical variation, and on distribution and biology or habits in Macedonia, these last being compiled chiefly from Prof. Müller's notes. A complete list of the specimens of all the species with wing-measurements and other details is given, and the nomenclature is of the most advanced character. We notice only two new names—*Galerida cristata mühle* nom. nov. pro *G. c. ferruginea* Mühle for the Crested Lark of Greece, and *Budytes flavus macronyx* subsp. n. for the Yellow Wagtail of north-eastern Siberia; but several forms mentioned in the account of the collection, such as *Carduelis c. balcanica*, *Cettia cetti mülleri*, *Cinclus cinclus orientalis*, *Dryobates major balcanicus*, *Picus viridis doffleini*, have been described as new in a previous publication. Following the description of the collections is a notice of other species recorded from Macedonia, and finally a complete systematic list of all the birds hitherto known from that country.

Four of the plates contain photographic views of some of the localities where collections were formed, and on two others, illustrated by a graphic method, the variation of the wing-lengths of several forms.

We must congratulate Dr. Stresemann on having accomplished a fine piece of work, which will be essential for all future students of the fauna of south-eastern Europe.

Taverner's recent papers on Canadian ornithology.

[Birds of Eastern Canada. By P. A. Taverner. Canada, Geological Survey Memoir 104 (no. 3, Biological series), pp. iv+297; 49 col. pls., 68 text-figs. Ottawa (Govt. Printer), 1919. 8vo.]

[The Birds of the Red Deer River, Alberta. By P. A. Taverner. Auk, xxxvi. 1919, pp. 1-21, 248-265; 4 pls.]

[Bird-houses and their Occupants. By P. A. Taverner. Ottawa Naturalist, xxxii. 1919, pp. 119-126.]

[The Birds of Shoal Lake, Manitoba. Id., ibid. xxxii. pp. 137-144, 157-164; xxxiii. pp. 12-20.]

The first and most important of Mr. Taverner's publications is his handbook of the birds of eastern Canada. It contains a large amount of concise information packed into a comparatively small compass, and deals with 766 species of Canadian birds, all those likely to be met with in Canada from the woodlands of the eastern half of Manitoba to the Atlantic coast.

The species are emphasized at the expense of the subspecies, which are merely mentioned in a paragraph. Under each species is given the recognized English name, other vernacular names in use, the French-Canadian name, and the scientific name from the A. O. U. Check-list. Then follow short paragraphs on distinctive characters, field-marks, nesting, distribution, subspecies, and economic status. The coloured illustrations, two on each plate, are necessarily somewhat small, but are on the whole very successful, and will be found most useful for identification. They are prepared by Mr. Frank Hennessey, of Ottawa, and reflect great credit on the artist.

In the first part of the work is a good key, based on that in Mr. Chapman's 'Handbook of the Birds of Eastern North

America,' which will be of great help to the beginner. In fact, the book is essentially a popular one in the best sense of the word, and is just such a one as should be placed in the hands of any newcomer with ornithological tastes arriving in Canada.

The second publication has already been mentioned in our notice of the 'Auk,' in which it was published. The third paper gives directions and useful hints for the construction and fixing-up of nesting-boxes, especially for the Purple Martin (*Progne subis*), for which a very elaborate construction resembling a pigeon-house is often built in America. The last paper deals with the avifauna of Shoal Lake, situated about 35 miles from Winnipeg, a favourite resort of many different kinds of water-birds and ducks which breed there in considerable numbers.

Todd on new Colombian Birds.

[Descriptions of apparently new Colombian Birds. By W. E. Clyde Todd. Proc. Biol. Soc. Washington, vol. 32, 1919, pp. 113-118.]

Nineteen new forms are characterized, all with one exception obtained by Mr. M. A. Carriker, jr., in different parts of Colombia. The list of these will be found in the 'Zoological Record,' and it does not seem worth while repeating them here. It would appear that the ornithological riches of the northern portion of the South American continent are even yet unexhausted, so constant is the stream of new species and subspecies still being described.

Townsend and Wetmore on Pacific Island Birds.

[Reports on the scientific results of the expedition to the tropical Pacific in charge of Alexander Agassiz, on the U.S. Fish Commission steamer 'Albatross' from August 1899 to March 1900, Commander Jefferson F. Moser, U.S.N., commanding. XXI. The Birds. By Charles Haskins Townsend and Alexander Wetmore. Bull. Mus. Comp. Zool. Cambridge, Mass., lxiii. 1919, pp. 151-225.]

The voyage of the 'Albatross' in the winter of 1899-1900, under the direction of the late Mr. Alexander Agassiz, was made for the purpose of studying the formation of coral-reefs

and making investigations in the marine fauna, especially of the deeper parts of the Pacific, and the collection of birds was quite a secondary consideration. Nevertheless, some 390 skins, 93 species and subspecies, were collected from 33 different islands; and this report, though somewhat belated, is of considerable importance, and must be consulted by anyone interested in the Pacific avifauna.

The land-birds, though few in number, have been subjected to isolation, and a study of their variation, due doubtless to this cause, is of very great interest.

The first portion of the paper by Mr. Townsend, who accompanied the expedition, contains a journal of the islands visited, with remarks on their physical characters. The groups where collections were made included the Marquesas, Paumotu, Society, Tonga, Fiji, Gilbert, Caroline and Ladrone archipelagoes. The second half of the paper by Mr. A. Wetmore contains an annotated list of the species obtained, with a good many interesting remarks on taxonomy and classification, and descriptions of a certain number of new subspecies. Mr. Wetmore appears to have been somewhat hampered in his determinations by the absence of sufficient material for comparison in the Museum at Washington, and in some cases his views by no means coincide with those of Mr. G. M. Mathews, especially in regard to the name of the Red-footed Booby, which he believes must retain Linnæus's name, *Sula piscator*.

It is interesting to learn that on some of the Pacific Islands the Frigate-birds are domesticated, and used like Carrier Pigeons for carrying messages from one island to another.

Wetmore on lead-poisoning in Ducks.

[Lead-poisoning in Water-fowl. By Alexander Wetmore. Washington, D.C., U.S. Dept. Agr. Bull. no. 723, 1919, pp. 1-12; 1 pl.]

Mr. Wetmore finds that in many parts of America, where duck-shooting is carried on on a large scale, the mud-flats become full of shot, which are eaten in considerable quantities by the water-fowl, and cause a distinct sickness, the symptoms

of which he describes. As lead is known to be an abortifacient in the females of mammals, it is probably also so in birds, and some experiments confirming this have shown that lead has a powerful effect on the virility of domestic fowls.

No suggestions for the alleviation of this trouble is proposed by Mr. Wetmore at the present time, but the cause and symptoms of the poisoning are described in order to bring it under wider notice, in the hope that some method may be discovered in the future of preventing this malady.

Wood on the eye of the Burrowing Owl.

[The eyes of the Burrowing Owl [*Speotyto cunicularia hypogæa*], with special reference to the fundus oculi. By Casey A. Wood, M.D. Extr. from 'Contributions to Medical and Biological research,' dedicated to Sir William Osler, in honour of his seventieth birthday, July 12, 1919, by his pupils and co-workers. Pp. 818-823; 1 col. pl.]

This short paper by Dr. Wood, who has made the special study of the avian eye (see 'Ibis,' 1920, p. 306), shows that the structure of that organ of the Burrowing Owl is very distinctly adapted to nocturnal vision, and that this is correlated with its habits which are distinctly nocturnal, though it is sometimes seen in daytime.

The paper is illustrated with a beautiful coloured plate, showing the appearance of the eye when viewed with the ophthalmoscope. This was prepared from a drawing made by Mr. A. W. Head in the Zoological Gardens in London.

As the paper appears in a special volume of memoirs dedicated to Sir Wm. Osler, it is not likely to be seen by many ornithologists, and for this reason we have drawn special attention to it.

Aquila.

[Aquila: Periodical of Ornithology. Vols. xxi.-xxv. for the years 1914-1918. Budapest.]

The annual volumes of 'Aquila,' the official journal of the central government office for ornithological studies in Hungary for the years of the war, have recently reached us, and the troublous times do not appear to have diminished

the activity of the Hungarian ornithologists, or to have restricted the publication of the results of their investigations. Otto Herman, the original editor and founder of the organization, died on 27 December, 1911, and was succeeded by Titus Csörgey for the 1915 volume; since then the responsible editor appears to be Stefan Chernel von Chernelbaza. The volumes are bilingual, in Magyar and German.

Here we can do little more than indicate the principal contents. The 1914 volume has a sympathetic memoir on Dr. Herman, with a portrait and a bibliography of his published work. There are papers on the osteology of the Ocellated Turkey (*Agriochoris ocellata*) by Dr. Shufeldt of Washington, on the morphology of the avian metacarpus and on some Pleistocene bird-bones by Dr. Lambrecht. Messrs. J. Schenk and K. Hegyföky report on migration in Hungary during the previous year; while Dr. J. Greschik writes on anatomy and histology, and Messrs. E. Csiki and G. Bittera on the food and economic status of various Hungarian birds.

The other volumes contain papers on the same or similar topics, all more or less closely concerned with Hungarian ornithology.

The last volume of the series contains an account of the historical development of the study of Hungarian Ornithology by Mr. J. Schenk, and two appendices. The first of these, by the Editor, is a Nomenclator Avium Regni Hungariæ, a checklist drawn up on the lines of the B. O. U. List, but without any distribution, followed by notes on the nomenclature in disputed or doubtful cases. Dr. Chernel does not follow the International rules altogether. He will not use the same generic and specific names, and calls the White-eyed Peohard *Nyroca ferruginea* instead of *Nyroca nyroca*. He also sticks to *Anas boschas* for the Mallard and *Turdus musicus* for the Song-Thrush, and gives his reasons for so doing. The second supplement to the 1918 volume contains an elaborate memoir on the former and present breeding places of the two White Egrets, *Herodias alba*

and *H. garzetta*, in Hungary, illustrated with maps and plans in view of their possible preservation by special legislation in the near future.

The Auk.

[The Auk: A Quarterly Journal of Ornithology. Vol. xxxviii. for 1920.]

The volume of the 'Auk' for last year contains a good many articles of general interest as well as many faunal papers which are more attractive to those living on the other side of the Atlantic.

Mr. H. H. Beck writes on the occult senses in birds, one instance of which is the "homing" sense which exists to a remarkable degree not only in the homing pigeon but also in certain sea-birds. The experiment undertaken at the marine laboratory of the Tortugas in releasing Sooty Terns many hundreds of miles away from those islands and the return of these marked birds, has proved the existence of one of these. An instance of another mysterious sense is the food-finding instinct. A carcass of a dog hidden in a hole and quite invisible from above was discovered within three hours by a pair of Buzzards (*Cathartes*), although there were known to be none of these birds within many miles, and Mr. Beck believes that it would have been impossible to detect the carcass either by sight or smell.

In an article entitled "sequestration notes" Mr. J. Grinnell develops a thesis that among certain non-flocking foraging birds, such as Ruby-crowned Kinglets (*Regulus*) and Audubon Warblers (*Dendroica*), a special note exists to warn other birds to keep out of territory already occupied; while Mr. J. T. Nichols writes at length on the voices of the Waders or Shore-birds, of which he has made a life-long study, especially on Long Island.

A valuable paper on the generic and specific characters of the Ceryline group of Kingfishers is contributed by Mr. W. de W. Miller. These he groups in three genera, *Megaceryle*, *Ceryle*, and *Chloroceryle*. Mr. Loomis identifies *Procellaria alba* of Gmelin, founded on a bird obtained during Cook's

second voyage, as the species now known as *Pterodroma parvirostris* (Peale) from Christmas Island of the Fanning group. Mr. W. E. Clyde Todd monographs the South American Crested Quails of the genus *Eupsychortyx*, and illustrates their distinctive characters by a coloured plate and their distribution by two maps. Dr. J. Dwight, who has long been engaged in the study of moult and change of plumage, has an interesting and instructive article on the Gulls. He believes that the smaller gulls attain their adult dress in the second year, while in the largest forms this process is prolonged until the fourth year. He also points out that younger birds can be detected by the more pointed shape of the primaries and by the more rounded ends of the tail-feathers. The successive plumages of *Larus philadelphia* and *L. argentatus* are described at length and illustrated on five carefully drawn plates. The question of the distinctive characters of the Common and Barrow's Golden-eye are discussed at length by Mr. Allan Brooks, as well as some other points in regard to the ducks of British Columbia; his remarks are illustrated by some fascinating drawings from his own brush.

The Killdeer Plover (*Oxyechus vociferus*), a common North-American bird, has long been known to range to South America, but was supposed to go there only during the winter months as a migrant. Recently Mr. Harry Watkins, who has been collecting for the American Museum in New York, has sent to Mr. Chapman fourteen examples of the Killdeer which he found breeding on the coast of Peru. The bird turns out to be separable from the North-American one, and is named *Oxyechus vociferus peruvianus* by Mr. Chapman.

Another new bird described is a duck of the Mallard group found in New Mexico and named by Mr. W. Huber *Anas novimexicana*.

Of the faunal papers, Mr. S. Cobb writes on the birds of the Catskill Mountains in New York, Mr. L. Griscom on those of Texas, and Mr. F. C. Lincoln on Colorado* birds, Messrs. Fleming & Lloyd on Ontario birds, and Mr. Wetmore

on the birds of Lake Burford in New Mexico. Mr. G. D. Hanna, who has spent six summers and four winters on the Pribilof Islands in Behring Sea, has added a good many species to the list of birds occurring there, including four species new to the North American list—the Falcated Teal (*Eunetta falcata*), the Sea-Eagle (*Thalassoaëtus pelagicus*), a Wader (*Heteroscelus brevipes*), and a Pipit (*Anthus spinoletta japonicus*).

The frontispiece of the volume is a fine portrait of the late William Brewster, whose memory is honoured in a sympathetic appreciation by Mr. H. W. Henshaw. There is also a long notice, with a portrait, of Lyman Belding the Nestor of Californian ornithologists, who died in 1917 at the age of eighty-eight years, by Mr. A. K. Fisher.

El Hornero.

[El Hornero. Revista de la Sociedad Ornitológica del Plata. Vol. i. 1917-1919.]

The first volume of 'El Hornero,' consisting of four parts, is now complete, and we must congratulate the editor, Dr. R. Dabbene, and his contributors on the success of their venture. Each number contains several good articles on some subject of Argentine ornithology, many shorter notes, and some personal paragraphs. The illustrations are chiefly from photographs.

Dr. Dabbene himself has an article running through three numbers on the Laridæ of Argentina, in which all the species are listed, with distribution and keys for the determination of the species, and useful outline sketches of bills, wings, and feet.

Señor L. Dinelli has some field-notes on the nidification of birds collected by him in the north-west of Argentina some years ago, which were worked out by Dr. Hartert and Señor Venturi in the 'Novitates Zoologicae' in 1909.

In an article on "The fantastic ornithology of the Conquistadores," Señor Carduso recalls the observations and records of the earlier explorers from Magallanes in 1520 onwards, and reproduces some of their quaint

illustrations; Señor Serié gives ample directions for the preparation and conservation of bird-skins; while M. Doello-Jurado writes a special article on the curious nests of the two species of Oven-bird (*Furnarius cristatus* and *F. rufus*), called Hornero in the Spanish vernacular, from which the journal takes its name.

Several new forms are described: *Batara cinerea argentina* from the Jujuy Province, by Mr. Stewart Shipton; *Penelope nigrifrons* and *Spinus icterus magirostris*, also from the mountainous regions of the north-western Argentina, by Dr. R. Dabbene.

List of other Ornithological Publications received.

- BARTSCH, P. The Bird Rookeries of the Tortugas. (Smiths. Rep. for 1917, pp. 469-500.)
- CHAPMAN, F. M. Unusual types of apparent geographic variation in colour and of individual variation in size exhibited by *Ostinops decumanus*. (Proc. Biol. Soc. Wash. vol. 33, pp. 25-32.)
- CHRISTIANI, A. Den Vestnorske Skaerpiber (*Anthus petrosus schiøtteri*, subsp. nov.). (Dansk. Ornith. For. Tids. 1920, pp. 157-162.)
- COWARD, T. A. The Birds of the British Isles and their eggs. 2nd ser.
- FLETCHER, T. B., and INGLIS, C. M. Some Common Indian Birds. No. 4. The Cattle Egret. (Agr. Journ. India, xv. pp. 373-375.)
- HARTERT, E. Die Vögel der pal. Fauna. (Heft. 11-12.)
- LAUBMANN, A. Kritische Untersuchungen über die Genotypfixierungen in Lesson's "Manual d'Ornithologie," 1828. (Arch. Naturges. vol. 85, 1920, pp. 137-168.)
- MCGREGOR, R. C. Some features of the Philippine Ornis. (Philippine Journ. Sci. vol. 16, pp. 361-437.)
- MURPHY, R. C. The Zoological Park of Lima, Peru. (Zool. Soc. Bull. xxiii. pp. 95-100.)
- SKOVGAARD, P. Den Sorte Stork saerlig i Danmark. (Viborg, 1920.)
- SWARTH, H. S. Revision of the avian genus *Passerella*. (Univ. California Publ. Zool. vol. 21, pp. 75-224.)
- SZIELASKO, A. Die Gestalten der normalen und abnormen Vogeleier. (Berlin, 1920.)
- WITHERBY, H. F. A Practical Handbook of British Birds. (Part ix.) Avicultural Magazine. (Vol. xi. nos. 10-12.)
- Bird-Lore. (Vol. xxii. nos. 5-6.)
- Bird-Notes. (Vol. iii. nos. 9-11.)
- British Birds. (Vol. xiv. nos. 5-7.)

- Brooklyn Museum Quarterly. (Vol. vii. no. 4.)
 Canadian Field-Naturalist. (Vol. xxxiv. no. 4.)
 Cassinia. (No. 23 for 1919, issued Oct. 1920.)
 Club van Nederlandsche Vogelkundigen. (Vol. x. pts. 3-4.)
 Condor. (Vol. xxii. no. 5.)
 Danske Fugle. (Vol. i. no. 1.)
 El Hornero. (Vol. ii. no. 1.)
 Emu. (Vol. xx. pts. 1-2.)
 Fauna och Flora. (1920, pts. 4-5.)
 Gerfaut. (10^e ann., pt. 3.)
 Irish Naturalist. (Vol. xxix. nos. 10-12.)
 Journal of the Bombay Nat. Hist. Soc. (Vol. xxvii. no. 1.)
 Journ. Fed. Malay States Museums. (Vol. ix. pt. 2.)
 Journal für Ornithologie. (Jahrg. 64-68, 1916-1920.)
 Ornithologische Monatsberichte. (Jahrg. 28, nos. 11-12.)
 Revue Française d'Ornithologie. (12^e ann., nos. 138-139.)
 Revue d'Hist. nat. appl. L'Oiseau. (1920, nos. 10-11.)
 Scottish Naturalist. (1920, nos. 105-108.)
 Verhandlungen Orn. Ges. Bayern. (Vol. xiv. pts. 1-3 & suppl.)

X.—Letters, Extracts, and Notes.

The Birds of the Anglo-Egyptian Sudan.

SIR,—In the last part of their paper (Ibis, 1920, p. 815) Messrs. Selater and Mackworth-Praed write of *Stephanibyx melanopterus melanopterus*: “Rüppell records a specimen of this bird from ‘Nubia.’ We should not regard it as admissible to the Sudanese list without further confirmation.” There is a recent and confirmatory record. Mr. J. C. Phillips (Bull. Mus. Comp. Zool. Cambridge, Mass., vol. lviii. no. 1, p. 6) obtained a female example at Sennar on the 27th of December, 1912.

As my record of the Sanderling *Crocethia alba alba* appears to be the only one from the Sudan, I would like to add that the bird was shot in the early spring on the White Nile at Khartoum and was in partial breeding-plumage. I mounted it myself and left it, labelled with sex and date, in the Gordon College Museum.

Yours truly,

A. L. BUTLER.

St. Leonard's Park, Horsham,
28 October, 1920.

Breeding-places of the Black-headed Gull.

SIR,—In a notice of Mr. Robert Gurney's paper on "Breeding-stations of the Black-headed Gull in the British Isles," you quote a statement made therein that "there appear to be no breeding colonies in any of the central counties south of Yorkshire." This is not the case, however, for a flourishing colony of some 20 or 30 pairs has existed for two years past on the moors not far from Baslow, in Derbyshire. I may add that Mr. Gurney's assertion that "the only [central] counties in which this Gull has formerly bred are Staffordshire and Shropshire" is also incorrect, as there has never been a colony in Shropshire.

Yours truly,

7 November, 1920.

F. C. R. JOURDAIN.

Nestling Birds.

SIR,—A regrettable error occurs in my paper, "A Contribution to the Study of Nestling Birds," published in the last number of 'The Ibis.' On p. 857, under my definition of the term "Mesoptile," the Barn-Owl, instead of the Tawny Owl, is given as a typical example of a species possessing this form of plumage. The mistake arose, I believe, from an editorial misinterpretation of *Aluco*—a pardonable mistake in view of the recent nomenclatorial changes in the use of this word. The error is, however, very misleading and, as it largely vitiates my definition of Mesoptile, I would be very much obliged if members of the B. O. U. would kindly correct it by making the necessary MS. alteration in their copies of 'The Ibis.' The Barn-Owls, it may be noted, are among the few species of Owls that possess little or no trace of this peculiar juvenile plumage.

I remain, &c.,

Benenden,
29 October, 1920.

COLLINGWOOD INGRAM.

Meeting of the American Ornithologists' Union.

The meeting of the American Ornithologists' Union in Washington, D.C., on 8-11 November, 1920, was one of the largest in the history of the Union. One-half of the Fellows and about 10 per cent. of the entire membership were in attendance. The business meetings on Monday were held at the Cosmos Club, and the other sessions at the U.S. National Museum. The election of Fellows and Members included Robert Cushman Murphy of Brooklyn, N.Y., as Fellow; E. C. Stuart Baker and Dr. Percy Lowe of London, Honorary Fellows; 13 Foreign Corresponding Fellows, among whom were Miss Dorothea Bate, Major Claude H. B. Grant, Miss Maud H. Haviland, Capt. Collingwood Ingram, David Seth-Smith, and Miss Emma L. Turner; 5 Members and 307 Associates. The election of officers for 1921 resulted as follows:—President, Dr. Witmer Stone, Philadelphia; Vice-Presidents, Dr. George Bird Grinnell and Dr. Jonathan Dwight, New York; Secretary, Dr. T. S. Palmer, 1939 Biltmore St., Washington, D.C.; Treasurer, W. L. McAtee, Biological Survey, Washington, D.C. The single vacancy in the Council was filled by the selection of Dr. W. H. Osgood of Chicago, and the other six members were re-elected. The program of nearly forty papers, five of which were illustrated by motion pictures, covered a wide range of subjects relating to North American birds, and also included papers on the birds of Argentina, Nicaragua, Peru, Europe, and Madagascar. In connection with the meeting an exhibition of drawings, paintings, and photographs of birds by American artists, supplemented by a series of prints showing the development of zoological illustration as applied to birds from the earliest times down to date, was arranged in the Division of Prints in the Library of Congress.

T. S. PALMER,
Secretary.

Wild Birds Protection Acts.

The following committees have been appointed to advise the Government in connection with the administration of the Wild Birds Protection Acts:—

By the Home Secretary for England—

His Grace the Duke of Rutland, K.G. (*Chairman*).

Mr. H. G. Maurice, C.B., of the Ministry of Agriculture.

Dr. Percy R. Lowe, O.B.E., of the Natural History Museum.

Dr. Montague Sharpe, K.C., Chairman of the Royal Society for the Protection of Birds.

Mr. E. C. Stuart Baker, O.B.E., F.Z.S., Secretary of the British Ornithologists' Union.

By the Secretary for Scotland—

Mr. Hugh S. Gladstone, F.R.S.E. (*Chairman*).

Mr. Wm. Eagle Clarke, LL.D.

Mr. Walter E. Collinge, D.Sc.

Mr. H. M. Conacher (representing the Board of Agriculture for Scotland).

Mr. H. J. Crowe (representing the Fishery Board for Scotland).

Professor J. Arthur Thomson, I.L.D.

Russian Ornithologists.

In the list of members of the Union will be found the names of six Russian Ornithologists, and we have recently made several attempts to find out what has become of them since the revolution in Russia. From various sources we learn the following, though the evidence is not altogether satisfactory in any single case. Michael Menzbier is believed to have been murdered in the streets of Moscow early in the revolution. Sergius Buturlin is also reported to have died. Valentine Bianchi is alive and still at the Museum of the Academy of Sciences at Petrograd. Peter Suskin was

recently at Simferopol in the Crimea, where he was acting as a professor in the so-called "White University." What has happened to him since the invasion and occupation of the Crimea by the Bolshevist forces we have not heard. We have no news of Gregory Poliakov or Sergius Alpheraki. Baron Loudon, a well-known ornithologist though not on our list of members, was robbed and plundered of his possessions and driven out of Livonia by the Bolshevists, and is now living in Berlin.

The Editor or Secretary of the Union would be very glad of any further information in regard to the fate of our unfortunate Fellow-Ibises in Russia.

Personalia.

Mr. A. F. R. WOLLASTON, M.A., B.Ch., D.S.O., M.B.O.U., has recently been elected to a Fellowship of King's College, Cambridge. Mr. Wollaston is well known to us for his explorations, both geographical and ornithological, of Ruwenzori and Dutch New Guinea, and is now organizing another expedition to the latter. He has recently completed a life of the late Professor Alfred Newton.

Mr. N. B. KINNEAR, M.B.O.U., has recently been appointed a First Class Assistant in the Natural History Museum, and is working in the bird-room under Dr. P. R. Lowe.

Capt. HUBERT LYNES, C.B., C.M.G., R.N., who spent some months last winter in Dafur, has recently returned there accompanied by Mr. Willoughby P. Lowe. He proposes to spend at least eighteen months in the Sudan collecting birds and making observations. He will also devote some of his time to other branches of Natural History.

Mr. GEORGE L. BATES of Cameroon fame, who has been in England for some months during the past season, has returned to Bitye in southern Cameroon, and hopes to make further explorations in Nigeria as well as in Cameroon.

THE IBIS.

ELEVENTH SERIES.

VOL. III. No. 2. APRIL 1921.

XI.—*Field Notes on the Birds of Macedonia. With special reference to the Struma Plain.* By F. N. CHASEN, Castle Museum, Norwich.

Introduction.

THE present paper is offered as a small contribution to our knowledge of the ornithology of a comparatively unknown part of Europe. In spite of the existence of more than forty original papers dealing with the birds of the Balkan Peninsula, the Struma plain still remains *terra incognita* to the ornithologist. The earlier publications contain little more than scattered references to the birds of this very interesting district, and more recent investigators have, like myself, carried out their work whilst subject to military discipline.

Dr. Erwin Stresemann's new book, 'Avifauna Macedonica,' for the loan of a copy of which I have to thank Mr. W. L. Selater, is exhaustive in its way, but as it was compiled largely from material accumulated during the war it—naturally enough—does not deal at any length with the Struma plain, which was either in Allied occupation or

well within the sphere of hostilities for the greater part of the war.

There is no need to dwell on the geographical nature of the country, its vegetation or other issues likely to affect its ornithology, for all this information is available—in a concise form—in a paper by Capt. Alan G. Ogilvie, O.B.E., published in the '*Geographical Journal*' (vol. lv. no. 1, Jan. 1920).

The observations from which the following notes were compiled were made during a period extending over a little more than eighteen months spent with the Allied Army in Macedonia. The writer was stationed for the greater part of this period on the Struma plain, but the long excursions that ordinarily fall to the lot of a mounted soldier, gave ample chances for bird-watching in the hill district that lies between the swiftly flowing river and the coast.

The area with which we are concerned in this paper may be said to form a crude triangle with its base along the line Lake Doiran-Seres and its apex at Salonica.

Opportunities for detailed or continuous observation are of necessity very limited when on active service and all dates given are inclusive, that is to say, they do not necessarily imply the absence of a species at other times. Most of the birds mentioned below are very familiar species, and only those are included the identification of which was certain. I was not in a position to collect skins, although I skinned quite a number of birds simply through inability to let a good specimen waste. What few I did get together were lost—with a mule—during the blizzard at Lahana, in March 1918. For this reason I have made no attempt to discriminate subspecies, and all doubtful records—however interesting—have been ignored.

I have to thank my very kind correspondent, Major Alex. G. L. Sladen, for the infinite amount of trouble he has taken in reading through my paper. In some cases we worked over the same ground, and Major Sladen has let me have some most interesting notes which have come to hand since the publication of his own papers.

The bird-life of Macedonia is varied and plentiful. The Struma plain abounds with large Accipitres; Vultures, Eagles, Buzzards, Kites, and Harriers may be seen. In the winter there are good numbers of Ducks and Geese. On the Struma itself are Grebes, Cormorants, and Coots, and in the summer, Terns. The level ground is haunted by Crested Larks and their kindred, the thickets by Warblers, and Buntings of several species are common everywhere and at all seasons. In the autumn there are flocks of Wagtails, Finches, and Pipits, and hordes of Redstarts and Flycatchers appear in their season. Late in the year huge assemblies of Crows can be seen near the Struma. In the spring handsome species from the south arrive and prepare to nest, including the Hoopoe, Roller, Bee-eater, Black-headed Bunting, and White Stork. The Magpie, Little Owl, and Tree-Sparrow are characteristic resident birds.

There are very pronounced local movements at nearly all seasons, and these complicate the real migratory events. These local movements are caused mainly by the withdrawal of resident species from their winter quarters to their breeding grounds, by severe weather compelling the birds on the hills and high ground to descend to the level of the river and some species to the coast, and by the gregarious habits of young birds of the year and attendant shifting from the locality of birth. In the case of the Jackdaw and Hooded Crow there was always the difficulty of distinguishing between residents and their broods, and migrants. Isolated pairs of Wagtails and Finches seen throughout the summer in selected localities were also confusing. I think, however, that the main features of migration as seen in the concerned area could be summarized as follows :—

(1) The arrival of breeding species in the spring accompanied by a “through” passage of other birds on their way to the north. It was not easy to distinguish migrants during the vernal movement, but there was a stream of Martins, Swifts, and Whinchats at any rate. The return journey in autumn is more pronounced—Redstarts, Spotted Flycatchers,

Warblers (especially of the genus *Phylloscopus*), Whinchats, Hirundines, and Wagtails passing in large numbers.

(2) The departure of wintering birds to the north in early spring. The Chiffchaff and Rook may be taken as examples. There is also a withdrawal of Geese, Ducks, wintering Thrushes and Finches. It would appear that—in the case of the Chiffchaff at least—this movement was completed before birds of the same species arrived in the country as spring migrants from the south.

(3) The autumn influx of birds seen throughout the next winter, *e. g.*, Siskin, Serin, other Finches, Meadow Pipit, Woodlark, Skylark, Goldcrest, Great Grey Shrike, Robin, Merlin, Sparrow-Hawk, Ducks, Geese, Rooks, and Woodcock. The movements of the Brambling and Fieldfare were very spasmodic.

The undermentioned migrants were first seen on the dates given :—

Black-headed Bunting.....	28 April.
Red-backed Shrike	8 May.
Whitethroat	12 April.
Lesser Whitethroat	7 April.
Black-throated Wheatear.....	13 April.
Wheatear	29 March.
Nightingale	7 April.
Swallow.....	21 March.
House-Martin	1 April.
Bee-eater	4 May.
Hoopoe	3 April.
Roller	17 April.
Cuckoo	6 April.
Lesser Kestrel	8 March.
White Stork	13 March.

The following species were found breeding :—Jackdaw, Magpie, Hooded Crow, Starling, House-Sparrow, Tree-Sparrow, Rock-Sparrow, Corn-Bunting, Gull Bunting, Black-headed Bunting, Calandra Lark, Crested Lark, Lesser Grey Shrike, Woodchat, Whitethroat, Lesser Whitethroat,

Cetti's Warbler, Blackbird, Nightingale, Wheatear, Nightjar, Roller, Little Owl, Kestrel, Lesser Kestrel, White Stork, Turtle-Dove, Collared Dove, Stone-Curlew, and Little Ringed Plover. To these Major Sladen has added Spanish Sparrow (Karasuli and Hirsova), Short-toed Lark, Nuthatch, Bee-eater, Hoopoe, Black Tern, Osprey and Kingfisher, as well as a few more species included in his own papers.

Other species were seen continually throughout the breeding-season or showed other signs of having nests, *e. g.*, Raven, Chaffinch, Ortolan, White Wagtail, Grey Wagtail, Red-backed Shrike, Stonechat, Kite, Common Buzzard, and Common Snipe. Some of these have been recorded as breeding in Macedonia, but as localities are not mentioned—and the occupied territory was so vast—the nests may have been a great distance from the area with which we are concerned—anywhere, in fact, between the Adriatic and Black Seas.

[CORVIDÆ.—Vast flocks of Jackdaws, Rooks, and Hooded Crows frequent the Struma plain during the winter months. From December 1916 to January 1917 the numbers were truly terrific, but the comparatively milder winter of 1917–1918 did not witness such large congregations. During the summer months very different conditions were in force, some Ravens, scattered pairs of Hooded Crows, and a number of Jackdaws representing the Corvidæ.

Generally speaking, there was a withdrawal of Crows in the very early spring. The numbers diminished before March, during which month a marked movement of Rooks to the W. and N.W. took place. After this Rooks were not seen at all—although some may have bred beyond the area of observation. (There are nests by the side of the Orient railway line between Salonica and Larissa.)

A daily increase in the number of Hooded Crows and Jackdaws in September and October may have been due to the gregarious habits of young birds bred in the preceding months. A large influx of "foreign" Jackdaws and Hooded Crows occurred in late autumn, and with these

came the flights of Rooks that were to populate the dirty acres of the plain for the winter. My diaries contain frequent notes concerning the entire absence of Crows from sundry localities during the period April to August. One of the largest Corvine movements was during the first few days of October 1917, when immense flocks of high-flying birds (sp.?) passed over Orljak; but from such varied points that I could not name the general trend of the movement by the compass.

A point worthy of notice was the unsuspiciousness of the wintering Crows in Macedonia. In the winter of 1916 my duties frequently caused me long rides across the plain, and I often walked my horse quite through flocks of Rooks, flocks that on occasions could almost be measured by the acre, without disturbing any but those birds in the direct path. They were certainly far more approachable than the Crows in Western Europe.]

Corvus corax. Raven.

Often seen on the hills, but not evenly distributed. It is resident and usually met with in pairs, although small flocks of anything up to fourteen individuals were noted. The road leading from Orljak to Kohcan-Mah wends through several good places for Ravens. Several seen at Paprat in autumn. In the case of unsavoury meals the Ravens would often be at the feast before the Vultures had them located.

Corvus cornix. Hooded Crow.

Abundant in winter, but less numerous than the Jackdaws or Rooks. During the spring odd birds were seen about the hills, where I located a few nests. On 13 January a Goose was shot from the bank of the Struma. It fell in a very awkward position, just on the edge of some ice piled up against the opposite bank. It was scarcely an hour before this Goose was retrieved, but when I did get it, it was completely spoiled by the Hooded Crows, who had pulled it about most audaciously. I was within thirty yards of the Goose from beginning to end, but in spite of this no amount of stone-throwing or shouting would shift the birds. The

cranium had been broken open and the brain-cavity completely cleared. After this a large hole had been made in the region of the clavicles, and finally the Crows had devoted themselves to the large and fleshy pectoral muscles. On 7 April I found three pairs breeding at Aracli. One nest had certainly been built in the same spring. The nests were about fourteen feet from the ground, in the forks of slender oak-trees, and two of them were quite accessible to a fairly active man. The new nest, to which I paid particular attention, appeared to be finished by 12 April. During the time that building-operations were taking place, the birds roosted at night in a tall fruit-tree (in full blossom), about two hundred yards away from the nest. On 18 April there was one egg in the nest. Both parents were very demonstrative when I was getting up the tree, flying round and cawing loudly, but later they showed great cunning in not loitering in the vicinity of the nest when I was about. The hen bird always slipped away at the first sign of danger. The nest itself was very conspicuous, composed of twigs, and neatly lined with horse-hair and a few feathers.

Corvus corone. Carrion-Crow.

I found a dead bird in December, but could not be sure of further occurrences.

Corvus frugilegus. Rook.

Large flocks about the plain during the winter of 1916-17. Especially numerous in December, 1916. On 19 March, 1916, a steady stream of Rooks was seen flying across the plain in a westerly direction at mid-day. Some of them (I am sure very weary birds) stopped for a rest in a clump of trees, and resumed their journey at dusk. The majority of the birds left their winter quarters at the end of February or beginning of March. The general direction of the movement seemed to be towards the N. and N.W., in which case it may be assumed that the flocks seen on 19 March were birds from a region to the S.E. of my area, following a line similar to that taken by the Macedonian Rooks. As

near as I could judge, this line crossed the mountains somewhere to the W. of Rupel. There was a complete absence of Rooks in spring and summer—at any rate from the places visited. The evening flights of Rooks on the Struma plain are sometimes of stupendous size and easily mistaken for genuine migratory movements. An immense flock passed overhead on the 2nd of March, and the number of birds was so great that for several minutes there was a noise like the whirr of a sharp breeze. The movements of some flocks observed in early spring would lead one to believe that there is some justification for the old saying that Rooks go mad in the spring. Thirty or more would separate themselves from a larger flying flock and swoop towards the earth, performing the most wonderful antics for a short time. They would twist about, and on occasions topple over in most extraordinary style. When the whole crowd suddenly dropped to the earth, the noise was not unlike that of an approaching shell.

***Corvus monedula.* Jackdaw.**

This is one of the most common birds in the country, and large numbers breed. Some of them paired as early as the middle of February, but there were flocks about several weeks later. A great deal of competition took place in Macedonia for available nesting-sites. This was due to the large number of Jackdaws inhabiting the country. Some of them did not breed at all, and flocks composed of from six to ten birds were roaming over the country, without showing signs of pairing, all through the spring and summer. The Jackdaws showed great adaptability in their choice of nesting-sites, and within a short radius from where I was living there were nests in the following sites:—In the minaret of a mosque and also somewhere in the ruinous roof of the same building, under the eaves of native houses (otherwise unoccupied), and in holes in a steep bank. The most interesting nest of all was placed in the lower branches of a Stork's nest. The Storks and Jackdaws seemed to be on the most amicable terms, but the advantages of this

strange union are rather hard to divine. One thing is certain, however, and that is the Storks must have been indebted to the Jackdaws for one thing, because the latter birds were constantly bringing sticks and re-arranging the twigs about their own nest. Storks do but little nest-building on their own account, and the Jackdaws' efforts undoubtedly made the home of this particular pair more substantial, as it was in a precarious state after weathering the previous winter. When both Storks were away from home, and then only, the Jackdaws would sit on the edge of the cup-like mass, *i. e.*, in the larger birds' domain. Some interesting possibilities presented themselves, but I never got any further into the matter. The Jackdaws surely had to restrain themselves where the Stork's eggs were concerned; but then, again, supposing this difficulty to have been overcome, I should imagine that the Storks would have found newly hatched Jackdaws a nice change from frogs. I noticed the act of mating on 29 March. Eggs 23 May. Newly hatched young at the latter end of April and 23 May. Young were being fed in the nest at the beginning of June. A bird of the year was flying on 1 June, and several broods flying about in the neighbourhood of their home by the end of the month. By the 1st of September flocks of sixty or more birds were common, and these had already associated themselves with their companions for the coming winter—the Hooded Crows.

A battle that took place at noon on a sunny day in February seems fairly typical of the methods adopted by this species when fighting. One bird was lying on its back on the ground with its beak directed at its opponent's head. It fought primarily with its feet, which were entangled in the feathers of the abdomen of the uppermost bird. The second bird stood bodily on the under bird, and balancing itself on out-stretched wings, it repeatedly pecked at its opponent's head. These two birds fought in a methodical manner. They wrestled for a few moments and then, as if by mutual agreement, separated and flew up to a low bough hanging over the chosen arena. On this occasion there were five distinct "rounds." The same bird was undermost each

time, and, indeed, it seemed as if it preferred to adopt this tactic throughout the fight, because each time the strife commenced anew it voluntarily assumed the position described. It was, however, a bad choice, because the uppermost Jackdaw was undoubtedly the conqueror.

Another point worthy of mention, although it has been remarked upon many times before, is connected with the feeding of the young. When the parent birds are returning from a long foraging expedition, their mouths are frequently so full of food that the space between the rami of the lower mandible is distended to form a very visible pouch, which is conspicuous enough to be noticed when the bird is flying past. This fact did not prevent the Jackdaws from making as much noise as usual. The only differences were, firstly, that the call was produced with the beak closed instead of gaping, as it usually is, and secondly, that the note was, in consequence, rather throaty in tone. The Jackdaws at Orljak used horsehair, grass, native cotton, and string (among other materials), for their nests. At Ormanli twigs were collected with great energy for repairing purposes, and human hair (found under the tiles in native houses) was a favourite building material.

Regarding the identity of Macedonian Jackdaws, many birds were certainly very light on the neck, but others appeared quite normal, and as near as I could say from observation alone, they were typical examples of *Corvus monedula monedula*. Major Sladen, however, has much better grounds to work upon, for he shot a number and writes:—"All that I examined appeared to belong to the subspecies *C. monedula collaris* Drummond, and all of them had more white above the neck than the typical bird. I found that it was not unusual to come across individuals which had a rusty red tinge all over. I remember an instance of one in a flock near Snevce, which was almost mahogany colour, but I was unable to secure it. I noticed the same thing to a lesser degree in individuals of *Corvus cornix*."

Pica pica. Magpie.

A very common bird and rarely out of one's sight, being found pretty well everywhere. In Macedonia it certainly does not show any preference for the wooded districts. Magpies were numerous at most of the places visited, and only occasionally scarce or absent, as at Baisili, in August. The large numbers that frequent the plain in winter, often feeding in the company of Jackdaws and Rooks, do not stop to breed in their winter quarters, although quite a number do nest in the country. There was a decline in numbers during the summer months, and an influx in the autumn. During cold weather in December there were chattering flocks of Magpies in nearly every leafless tree near the river. On the hills in the autumn, flocks of from twelve to twenty birds could be seen leading the life of true Crows, foraging for food on the stony ground. A good many kept in pairs throughout the winter. Nests were fairly common but often well hidden, some in trees, others in tall dense bushes. Several pairs bred in the neighbourhood of Ormanli; none actually in the village. Young birds were seen in the nest during the first week in May. Broods flying 19 May. The peculiar habit that the Magpie has of jerking its tail upwards when alighting served the species in good stead on the muddy Struma levels. I feel sure that the movement is accentuated when the bird alights on wet or dirty ground, and possibly there is a clue to the origin of the habit to be found here. The Magpies in Macedonia were fond of roosting in old nests, and a stone flung into an old Stork's nest in the evening would often cause as many as eight birds to leave in single file. A partiality for selected roosting-places was a noticeable habit, and a regular flight to these places, often groups of trees of a good height, in the evening reminded one of the Rooks' evening flights. The Magpies would settle down to rest with many chuckles, but once settled they sat close. I witnessed a good demonstration of this habit on 16 June at Kopriwa. At sunset a large number of Magpies passed over the village from the direction of the hills. They went towards a clump of trees half-way across the plain, and

I judged them to be birds that had spent the day wandering about at the foot of the hills and banded together in the late afternoon. Later, I saw several flocks leave the ground and mount high into the air—they always fly high on these occasions—and take a straight line for the roosting-place, exactly like a mob of Rooks. Small flocks of about a dozen birds followed at intervals, from various points, for some time. I rarely saw more than thirty Magpies in one compact flock. Several times during the latter end of May—when some of the young were beginning to fly—I saw cases of what appeared to be lack of parental affection in this species.

Garrulus glandarius. Jay.

Seen in the wooded districts which are few and restricted in area. A local bird, not straying over the country like the Magpie. After severe weather and snow on the hills, odd birds appeared on the Struma plain, especially in December.

Sturnus vulgaris. Starling.

A common resident. Flocks on the open ground in winter and also other birds in the villages. The Starlings diminished in numbers in July and August, when I noticed a complete absence from certain haunts. They breed mainly in the villages. There were evening flights to roosting-places near the Struma—usually large clumps of reeds—which reminded one of the Starling's habits on the Norfolk Broads. Starlings breeding in Elisian had purple heads.

Oriolus oriolus. Golden Oriole.

Several seen in June.

[FRINGILLIDÆ.—Very few Finches of any species were seen in the spring, and I found no nests other than those of Sparrows.]

Coccothraustes coccothraustes. Hawfinch.

One record only. 23 January, near Lozista.

Chloris chloris. Greenfinch.

Small flocks common from October to February, but this was by no means a conspicuously abundant species. A few seen in the spring.

***Carduelis carduelis.* Goldfinch.**

Not seen during the breeding-season, but very common for the rest of the year. The small villages situated at the foot of the hills were strongholds for this bird. The once cultivated patches of tobacco, cotton, and vegetables, but now only patches of weeds with a remnant of the original crop showing through here and there, always attracted the Goldfinches in winter. They drank regularly, even in the most severe weather, and had quite a novel method of doing so. Small parties would fly to the reed-beds, and the birds would cling to the bases of the reeds about two inches above the water and drink by bending over to the surface. After this they would often alight on the snowy flotsam and flutter in the water to their content. A Marsh-Harrier attended one of these particular watering-places day after day, and levied a regular toll on the birds as they came to drink.

***Spinus spinus.* Siskin.**

Several seen in sheltered corners of the plain from December to March. One pair frequented a small patch of reeds near a pond for at least nine consecutive weeks in the cold weather. I took some pains to find out the nature of the food, and found that it consisted of the seeds of half rotten "blackberries" which were still hanging on the bushes. The Siskin's confiding habits were most pronounced.

"To-day a pair of Siskins were feeding in some pink ground-nettles only a yard or so from my feet. Another little hen sat on a small bush, beside the stream. I stood quite by the side of the bush but she was not in the least disturbed. I seized a twig and gently pulled it until the whole bush was swaying, but still the bird remained. At last I took a step nearer and stretched out a hand to seize her, upon which she fluttered away." (Diary, 17 March.)

***Acanthis cannabina.* Linnet.**

Small flocks in autumn and winter.

Serinus serinus. Serin.

Flocks in early October at Cakirli. A few remained (actually in the village) at Orljak through the winter. Severe weather always had the effect of bringing more into the village, where they found shelter and food.

Pyrrhula pyrrhula. Bullfinch.

A few seen in the winter, usually alone or in pairs. A curious feeding habit was noticed on 7 February. A male plucked a berry from a slender twig overhanging the water, while it was on the wing. The bird remained for a few seconds fluttering, or rather hovering, by the side of the berry before snatching it. The twig would have been scarcely stout enough to bear the weight of the bird.

Fringilla cœlebs. Chaffinch.

Extremely numerous in winter. The common Finch of many districts, in some cases outnumbering the Tree-Sparrow. Most of the Chaffinches withdrew from their winter haunts in March. The nest was not found, but a few birds, obviously paired, were seen through the spring. An influx in October.

Fringilla montifringilla. Brambling.

On 4 January a number were mixed with the Chaffinches in Orljak. The weather was severe and there was snow on the ground. There were also some independent flocks of considerable size near the river. These birds went as suddenly as they had appeared, and a few days later not one was to be seen. One or two others identified at odd times during the winter.

Passer domesticus. House-Sparrow.**Passer montanus.** Tree-Sparrow.

Both species common almost everywhere. *P. montanus* predominates in a large number of districts, and I should say is numerically superior in most parts of Macedonia. Both species breed freely. Although both kinds could be seen in mixed flocks during the day, there was a strong tendency to roost in specific bands. *P. montanus* preferred willow-trees for this purpose.

Passer hispaniolensis. Spanish Sparrow.

Seen occasionally with other Sparrows, but apparently very local in distribution. Several could usually be found in Elisan.

Petronia petronia. Rock-Sparrow.

I have only one record and that concerns a pair breeding at Orljak. I found a nest with young in a high bank. The nest was in a hole about fifteen feet from the ground, and there is but little doubt that the hole was found ready made. The behaviour of the female and the loud wheezy chirruping of the young made the detection of this nest inevitable by every person who passed by. Otherwise it would have been difficult to locate on account of the many similar but unoccupied holes in the same bank. Whenever I approached both parents were somewhere near the hole. The male would fly off to a wire fence about 15 yards away and remain watching. It would call incessantly using a double note, but nevertheless this parent would not excite itself unduly. The female, however, would hopelessly betray the nest. It would remain at the hole till the last moment in a very agitated state. It would also return to the brood at the earliest possible moment, and more often than not fly straight into the hole.

Emberiza calandra. Corn-Bunting.

Very common. Abundant in winter, and twittering little flocks were seen everywhere. The gregarious habits continued well into March, but when I went along the Orljak-Kopriva road on the 14th of April they seemed to have settled down a bit. At Karamatli they nest side by side with the Shrikes and *E. melanocephala*. Nests were also plentiful at Gramatna, at which place I found eggs up to the end of June. Young birds at the beginning of July. A favourite site for the nest was in a low bramble-bush growing near the headland of a poor wheat or barley crop. In February mixed flocks of Corn-Buntings and Goldfinches were seen.

Emberiza citrinella. Yellow Bunting.

Two records only, and, curiously enough, both on 12 January (1917 and 1918). The former a small number near the Struma, the latter a single bird.

Emberiza cirrus. Cirl Bunting.

Common. Found in flocks all the winter, and in some districts the predominating species as at Cakirli in October. Small flocks could be seen along the road from this place quite up the hills to Sivri, over a scrubby broken area, where the ascent was very rough, and few other birds could be seen. I found some nests at Karamatli and eggs during the latter half of April. Flocks were seen again on the 1st of September, although broods were still being fed on that date.

Emberiza hortulana. Ortolan.

Seen in summer. Common at Aracli and Karamatli in April. Mixes freely with *E. cirrus*.

Emberiza cia. Meadow-Bunting.

Seen commonly in winter and spring.

(*E. schœniclus*, a bird at Ormanli in February, was almost certainly a female.)

Emberiza melanocephala. Black-headed Bunting.

A common summer bird. Seen 28 April, but I think there were earlier arrivals. It was usually found frequenting the cultivated or more or less open stretches of ground. Its chosen haunts were usually where fruit was growing, a patch of currant-bushes, a group of fig-trees, or a vineyard, for instance. The pleasant little song has more music in it than that of most other Buntings. It commences with a "Chit-chit-chit," which is followed by a short musical bar, nicely warbled and repeated twice or, perhaps, three times. The introductory notes may be faltering with a good pause between each note, but the final part of the song comes out with a rush. The introductory notes were omitted by many males heard singing in June.

I found nests at Mirova, Kurkut, Karamatli, and

Gramatna. The rolling hills between the two last-named places were especially good breeding-grounds. These hills are very bare. The ground is stony and clothed with short grass, with uneven clumps of brambles here and there which are in some places so dense that they constitute a thicket. There is only an occasional group of trees or anything that resembles a hedge. It is, in fact, ideal country for Shrikes, Buntings, and Whitethroats. I was not in time for early eggs, but on the 1st of July there were five nests each containing four eggs, and in all cases well incubated. Young birds seen in the nest at the end of June and beginning of July. The nests were fairly well made, not models of neatness exactly, and usually placed in the thickest part of an individual spray on a low bush. None of the nests were down in the centre of the bushes, and they were all easy enough to find. The male would sit on a top twig near the nest, singing. The hen would dart off the nest when you had started to poke the bush about with a stick, and rarely before. The bushes chosen were mostly below the waist in height.

Lullula arborea. Wood-Lark.

Seen from September onwards. A few in August. Small parties of from four to six birds at Baisili in autumn.

Alauda arvensis. Sky-Lark.

Frequent, but not found breeding. The level ground between Orljak and the river was a good place to find them in winter.

Melanocorypha calandra. Calandra Lark.

Common, but not nearly so numerous on the Struma plain as *Galerida cristata*. Eggs at intervals in April.

Calandrella brachydactyla. Short-toed Lark.

A pair near the Struma on 26 May were probably breeding, but I could not find the eggs. Other pairs seen in June on the hills (Mirova and Kurkut). Found breeding at Karasuli and Dudular (a camp quite near to Salonica) by Major Sladen.

Galerida cristata. Crested Lark.

The commonest Lark of the districts I visited and a resident bird. No pronounced migration was noticed, but a good deal of local movement took place. In one case this local movement was very decided—namely, the withdrawal of the birds from their winter quarters (*e.g.*, the interior of the villages) in the early spring to the vicinity of their breeding-grounds. In the winter small parties of from six to twelve birds were met with in a variety of places. Unlike many other species of birds they showed no extreme gregarious habits in severe weather, and rarely more than a dozen were seen together. Immediately the weather improved the small flocks broke up, and signs of pairing were evident at an early date. Indeed, a fair percentage of birds had remained in pairs all the winter. As early as 13 February, one of these Larks was making a laudable attempt to sing. It was a sunny day and the blue sky was quite spring-like, but there was a bitter wind blowing that ruffled the songster's plumage to confusion as it sat on an old mud wall. In the villages they are fond of running about the rough roads and rolling about in "sand-baths," their vigorous actions in these raising little clouds of dust.

Some bred on the level ground near the river. During the breeding-season they were very tame, running about in the long grass about twelve feet away and only reluctantly taking wing. Far more, however, nest on the hills, and in favoured places a good many nests may be found in a small area. There were plenty of nests between Mirova and Kurkut in June, but the most prolific district seems to have been the country included by a radius of, say, four kilometres from Karamatli. I saw eggs during the third and fourth week in June and first week in July, but lack of observation is responsible for absence of earlier dates. Most of these were placed in the middle of a tussock of grass and stumbled upon when hunting for the eggs of Black-headed Buntings. Five nests found in one day each contained three eggs, but these may have been incomplete clutches.

Some of the nests situated on the hillsides had very little cover. The young birds enjoyed themselves in the tobacco patches after leaving the nest and kept in broods even when full-grown. The high-pitched voice (*i. e.* the call-note) was heard never so commonly as when the snow was deep. In the winter the species established very intimate relations with the troops, and we had regular visitors to our bivouacs and huts for the table-scraps.

Like *Alauda arvensis* this bird mounts into the air and sings aloft, but its performance on these occasions differs a good deal from that of the better-known bird. The Crested Lark does not soar in a steadfast manner, nor does it remain for a long period poised on quivering wings. It appears to wander into the air rather aimlessly and does not attain the altitude usual to the Skylark. It does not remain in the air for any length of time, nor does it mount with any great frequency. In one point, however, the two species are almost alike, for both birds drop abruptly when nearing the ground—cutting the song short. In the hot weather these Larks run about with dragging wings and gaping beaks. The heaps of mule dung and associated clouds of insects attract large numbers. A word as to the usual tactics employed in battle. First, the two birds face each other and make sundry “feints” in a manner that is good to see. Both then jump upwards and meet in the air with a slight collision. A short chase follows. Some of the combats last a considerable time and take the principals a long way from the starting-point. The voice is very Lark-like with a specific note easily detected. The syllables used and the tone of the voice are not unlike those of the Skylark, but when compared with this bird the Crested Lark is very unmusical. There is no persistence or quality in the song. When the bitter Vardar winds were blowing across the plain and the passing skeins of Geese were the only other signs of bird-life, the Crested Lark could always be seen running along the snowy parapet searching for our table scraps; at times the little bird would squat right down on its tarsi, and with crest erected to its fullest extent

and beak pointed almost vertically to the sky, would chatter its cheery little bar so near to us that we could see its throat bubbling with every note.

Motacilla boarula. Grey Wagtail.

Seen throughout the year, but most plentiful in autumn and winter. In the latter season they were observed in the evacuated villages running about the roofs and mud-brick walls, searching under tiles where possible and commonly entering houses. The Grey Wagtails fell an easy prey to the troops with their primitive bird-traps, but were so unsuspicious that it was considered bad sport to catch them. The same bird would walk into the most obvious trap time after time.

Motacilla alba. White Wagtail.

Very common in October and seen throughout the winter. Much less plentiful in spring, and very few seen in summer. Some young birds on 5 July and a pair of adults at Baisili, 5 August.

Motacilla flava flava. Blue-headed Wagtail.

Several adults at Cakirli 24 September (*circa*). They came with crowds of Redstarts and Spotted Flycatchers.

Motacilla flava rayi. Yellow Wagtail.

Large numbers in flocks of from thirty to sixty birds, or even more, appeared in the vicinity of Karamatli during the last few days in August and beginning of September. Some of them loitered about for several days. These flocks were largely composed of immature birds, *i. e.* birds of the year. Adults of the present race were seen, and for this reason I have included all these Yellow Wagtails under the heading of *M. f. rayi*. Further discrimination of species without skins would be impossible. I could not identify the adult of *M. melanocephala* to my satisfaction, but Major Sladen has skins obtained at the mouth of the Vardar.

Anthus campestris. Tawny Pipit.

Some noticed simultaneously with the increase of Wagtails in the autumn.

Anthus trivialis. Tree-Pipit.

Aracli, 6 April.

Anthus pratensis. Meadow-Pipit.

Struma plain in winter. When the snow fell these Pipits came to our tents for food, mixing with the White Wagtails and Crested Larks.

Sitta europæa. Nuthatch.

Common on the hills, but local in distribution. In spring at Aracli. Particularly plentiful in small woods near Lahana in October.

Regulus regulus. Goldcrest.

Some on the hills in October. One at Gumisdere, 7 November; another at Kopriva, 24 December.

Parus major. Great Titmouse.

The commonest Titmouse. Found on the hills wherever there is a trace of cultivation, and often in the scrub in quite desolate places. Most frequent from October to January, but numerous in April.

Parus cæruleus. Blue Titmouse.

Practically as *P. major*, but not so common.

Parus lugubris. Sombre Titmouse.

Two records. A pair haunted some pear-trees on which the fruit was rotten, in October and November at Paprat. Another pair at Aracli in April.

Ægithalus caudatus. Long-tailed Titmouse.

A few on the hills in autumn. Common in April and May.

Lanius excubitor. Great Grey Shrike.

Seen near the Struma in winter, especially in January. I remember one bird of a pair keeping in front of my horse for more than a mile, darting from its perch and skimming low over the ground, a short distance ahead, and then suddenly rising and perching on the top of a bush again.

Lanius minor. Lesser Grey Shrike.

Plentiful enough in June and July. Breeds freely. A number of nests in the Gramatna area.

Lanius senator. Woodchat.

A numerous summer bird to be seen in most localities — the Struma plain, the hills near Lake Doiran, and the woods at Mirova alike. Not so abundant as the next species. The dapper black and white plumage with rich sienna cap that glows brick-red when the sun hits the bird's poll, renders this Shrike very conspicuous. When they first arrive in the country and prior to nesting (I have no dates likely to be first arrivals), they roam about in pairs, flying from one bramble bush to another, keeping close to the ground in their short flights. The Woodchat is by no means a restless bird. A pair will take up their position on a clump of tall, woody and thorny undergrowth, post themselves about ten yards apart, and wait for coming events with great patience. They will crouch on a bough with their white breasts towards you and remain inactive for as long as six minutes by the watch. I say "inactive," but really the birds are very alert. The head is constantly moved, being cocked at every conceivable angle as the bird looks for passing insects. If an insect is caught by one of the pair, the less fortunate bird will flit over to its mate to watch the process of thrashing the insect to death against a small twig, and then return to its own "look-out" and resume the same seemingly indolent but really alert position. The short note is pleasing, but the call-notes are harsh. The white rump is very conspicuous in flight. Nests between Karamatli and Gramatna.

Lanius collurio. Red-backed Shrike.

A common summer bird. First seen 8 May. There were plenty near our camp during the second week in October. A diary note remarks their absence on 9 October, but I expect the last birds had gone before I appreciated the fact. Stagnant water near the river, the extensive beds of red poppies, and, above all, the high ground on the hillsides, where there were no hedges but acres of short thorny

vegetation, were their favourite haunts. I was singularly unfortunate with regard to nests, but had noted flying broods—in barred juvenile plumage—by the 1st of September. Quite a number frequented the country in the vicinity of our camp, and it was not surprising that their familiar habit of impaling insects on the thorns of bushes should be brought to notice quite commonly.

I fancy the Shrike's butchering habits have been pretty well worked out by now, but I should like to include a field-note that describes the whole performance:—

“12 September, noon and very hot. I was lying under a bivouac-sheet thrown over a short fig-tree, persuading myself that I was in the shade, when I noticed a Shrike operating only a few yards away. It was a young bird, but it had already learnt the dexterous manipulation of large insects and the family method of treating them. The bird caught a large grasshopper, on the wing. (The grasshopper was about $1\frac{1}{2}$ inches long and had bright red under-wings.) It was then carried in the beak—and it looked a large bundle compared with the size of the bird—to a tall bramble bush, where, seated on the topmost bough, the Shrike paused for a minute. Then descending to a twig about half-way down the bush and on the outside, it thrust the insect, back upwards, on a long slender thorn. A slight shuffling preceded the impaling, and was evidently the attempt to kill and to get the grasshopper into a convenient position. The thorn was pushed into the middle point of the under surface of the thorax. The point penetrated about one-third of an inch and thus did not protrude through the insect's back. When I examined it a little later the prey was apparently quite dead. There were no more insects on this particular bush, but a search of the neighbouring brambles revealed three more plentifully-stocked larders of which large grasshoppers formed a prominent part.”

[SYLVIIDÆ.—The geographical conditions of many parts of Macedonia are unsuited to the habits of Warblers, but nevertheless quite a goodly number do frequent the more likely

places, and in the autumn, when birds of passage are in the country, the vineyards and streamsides literally teem with little *Phylloscopine* birds. In June also there were plenty of Warblers in the vicinity of the villages, but, as I was not in a position to use a gun, I could only identify the more familiar species. I found the hillside vegetation well worthy of notice during the last week in August. The bushes were loaded with blackberries, and Warblers of a dozen species could be seen dodging about, little birds, yellow, grey, or brown in colour, all slipping through the undergrowth here and there and rarely giving a good chance of observation. *Phylloscopus* was usually the predominating genus. On 7 September Warblers were still common,—thronging of Whitethroats, Garden-Warblers, and Blackcaps (these last still in pairs) being found wherever there was a scanty hedgerow or wooded corner. On 12 September I made the following note:—“It would be difficult for any person who has not witnessed such a sight to credit the number of ‘Willow-wrens’—I used the word loosely—in the district where we are camped at present (Çakirli). The ground is very rough, there are no habitations, cultivated patches, or roads, but simply the hills, broken by gullies and rough tracks. The ground is covered with a kind of dwarf oak—at present bearing acorns, prickly bushes, and brambles. This scrub is haunted by scores of Warblers.” Without means of verification I shall not attempt to describe species, but the Chiffchaff and Willow-wren were certainly there. These were still common on 3 October. I have added a few notes on the species I could actually name.]

***Phylloscopus collybita.* Chiffchaff.**

The Chiffchaff winters in Macedonia, although in no great numbers, and no bird can be more reserved in its choice of winter quarters. The Struma plain is intersected by tiny waterways which follow a tortuous course, eventually finding their way into the river. These irregular waterways, together with many isolated ponds, are overgrown with

aquatic vegetation. Beds of reed-mace usually fill the centre of the ponds. In these thick masses of reeds and in the half-rotten and wind-bruised "flags" growing on the banks the Chiffchaffs spent the winter months. There was a certain place near Ormanli where I could always rely on finding one or more of these birds, even in the most severe weather in January and February. In windy weather they would be difficult to see and would spend the day creeping about the undergrowth near the ground or water. At the end of March they disappeared, but immigrants arrived very early. I infer that the birds wintering in Macedonia go north to breed and move before birds that winter farther to the south appear in their place, but as birds of passage only. Not seen in summer.

Phylloscopus trochilus. Willow-Warbler.

Cettia cetti. Cetti's Warbler.

Numerous in the summer. The nests were extremely difficult to find. I was unsuccessful in the breeding-season, but have no doubt that this Warbler breeds in suitable places between the Seres Road and Kopriva. A nest at Orljak was situated quite in the middle of a dense mass of brambles; another in a tall and very thick hedge corner. Both these were found in the autumn, long after the birds had gone and the leaves fallen, although I had searched diligently for them in the previous May.

Acrocephalus schœnobæus. Sedge-Warbler.

Sylvia borin. Garden Warbler.

Sylvia atricapilla. Blackcap.

Sylvia communis. Whitethroat.

Seen 12 April; heard singing the same evening. Found commonly over the country by 14 April. Breeds commonly. According to other observers my first date is a late one, but although there may have been Whitethroats in the country before 12 April I never saw them on the Struma plain.

Sylvia curruca. Lesser Whitethroat.

Seen 7 April. Still in pairs 20 September. On 3 August a brood spent the greater part of the day picking up ants a few yards from the door of my bivouac.

Turdus pilaris. Fieldfare.

Seen from the beginning of January to the middle of March, but never in very large numbers. A small movement, apparently to the south, in January, small flocks flying over Orłjak in an intent manner. Single birds seen later were not at all shy. They spent their time grubbing about on the ground under cover of the bramble bushes and were loath to take wing. When poked out with a stick they would merely skim along the ground to the next cover.

Turdus philomelos. Song-Thrush.

Occasionally in February and March on the Struma plain.

Turdus merula. Blackbird.

Resident, but not very common. Several pairs bred near Karamatli. A nest with four eggs at Aracli, 14 April. This nest was in an extraordinary position. It was conspicuously placed on a projecting root on the side of a gully, which was about three feet deep, the nest being therefore really below ground-level. This nest was subsequently destroyed by reason of the gully assuming its original function of a waterway after some heavy rain.

Phoenicurus phoenicurus. Redstart.

Common in summer and especially numerous in September ; 14 October and 1 November at Orłjak.

Phoenicurus gibraltariensis. Black Redstart.

Frequent from November to March. At the beginning of December a number near the sea at Salonica (some tired Buzzards and a coasting-movement of Finches noted at the same time). November was the best month for them on the plain, but they rarely stayed in a given place for long and were usually met with alone or in pairs.

Erithacus rubecula. Redbreast.

Sufficiently rare to be noted when seen. A few near the Butkova River, 23 January. Others at intervals in winter. One at Sivri, 2 October.

Luscinia megarhyncha. Nightingale.

Common summer bird. Noticed 5 April, 1916 at Kopriva. Singing well, 14 April. Several nests in June, a large proportion of the eggs being light in colour. By 4 July broods in spotted plumage were hopping about the thickets. In 1917 the first record was 7 April, on which date a bird was singing lustily in the evening. I was much impressed with the very sedentary habits of this species. In several cases a pair appeared in April in a small piece of cover, quite isolated from other vegetation, reared their young there, and could always be seen in the same small area until the time for departure arrived in the autumn. The Nightingales at Kopriva were still in their secluded corners on 15 September.

Saxicola rubetra. Whinchat.

Plentiful in autumn, especially the first week in September, when they outnumbered the Stonechats.

Saxicola rubicola. Stonechat.

A common resident, wintering in selected localities at intervals along the Seres Road and on the border of the plain. All the birds I saw in winter were quite adult and in pairs. I formed the opinion that birds of the year did not stay in the country. The parents of a brood seen on 5 August were very dark in colour and not in the least brown or reddish on the underparts. The voice was that of the present species.

Ænanthe ænanthe. Wheatear.

A common bird in Macedonia, where there are large tracts of country suited to its requirements. It spends the greater part of the year in the country, being seen from the end of March to October. In the blizzard of the 29th of March Wheat-ears were running about in the snow at Lahana.

Several nests were found. The number of adult birds was augmented in September, but by 9 October the species was absent from some places where it had been common during the preceding months.

***Enanthe hispanica*.** Black-eared Wheatear.

A pair at Orljak, 26 May. One—an adult male of the black-throated variation—at Aracli, 13 April. A few others throughout May.

***Accentor modularis*.** Hedge-Sparrow.

Only three records. Two seen in February and one in January, all on the Struma plain. All observers seem agreed as to the scarcity of the Hedge-Sparrow in southern Macedonia.

***Cinclus cinclus*.** Dipper.

Found in a few widely scattered localities, but the country is not at all suited to their requirements. In October heavy rains had the effect of changing the dry pebbly river-bed at Gumisdere into a torrent, and a few Dippers appeared. They stayed until the water ceased to rush down from the hills, which was only a matter of a few days.

***Troglodytes troglodytes*.** Wren.

Frequently seen, but not common. Noticed on the banks of the Struma in February and January, and at Aracli in April.

***Muscicapa striata*.** Spotted Flycatcher.

Common in spring and autumn, especially so at the latter season. Seen 16 April. For the last half of August and first few days of September they were very numerous, the increase in numbers corresponding to similar increases in the ranks of the Redstarts, etc. I have rarely seen so many as in the fruit-growing district of Sirt Dere on 8 September. In fact, a pair or more seemed a necessary adjunct to each fig-tree or vine. On 20 September they were still common, but there was a decrease by 3 October. These Flycatchers would ignore the butterflies swarming about them, but would dart at the largest of the Hymenoptera, giving each a sharp

nip before swallowing them. I saw one bird catch an insect which was far too large for it to treat with its accustomed neatness. The Flycatcher battered it against a twig with a great show of fury, fluttering from bush to bush with its burden, and was still working at the insect in terrier-fashion when it passed out of sight.

Muscicapa hypoleuca. Pied Flycatcher.

Karamatli in April (first date 12 April).

Hirundo rustica. Swallow.

The most common of the Hirundines. First dates 9 and 21 March (1917), 27 March (1918). Mating, 7 April; nest-building, 1 April. Eggs well incubated, 21 May. Breeds in most of the villages on the plain—if not all.

Delichon urbica. Martin.

Seen 1 April, but not in any numbers until the end of the season (19 September). Some passing flocks, 21 August.

Riparia riparia. Sand-Martin.

Abundant along the Struma. Crowds at Kopriva Bridge in May.

Picus viridis. Green Woodpecker.

Struma plain in January. Karamatli in September.

Dryobates major. Great Spotted Woodpecker.

Seen at all seasons of the year. Paprat was a good locality for them. Some would be met with on the open hills, making their way across country from one copse to another, the loud "*pic-pic-pic*" announcing when they settled. They were particularly attracted by the leafless fig-trees in winter. A pair seen at Aracli in April may have been nesting. I have no record of *D. medius*, although it is stated to be the common Woodpecker of Macedonia.

Cuculus canorus. Cuckoo.

Seen 6 April, and numerous through the spring of 1918. Very few seen in 1917, but from all accounts 1916 was a good year for Cuckoos.

Micropus apus. Swift.

Seven at Ormanli, 22 May. They stayed about two hours. Not seen again till August. On 21 August some flocks appeared in company with Martins and were evidently on passage.

Caprimulgus europæus. Nightjar.

28 May. On Struma plain in September. At Salonica in October. Two eggs found by a friend about last week in June on the hills near Gramatna.

Merops apiaster. Bee-eater.

Common in summer. Present 4 May in pairs, and 19 September. One of the commonest sounds on the Struma plain in summer is the strange cry of the Bee-eater. I was never fortunate enough to find a nest myself, but had eggs brought to me from a native cemetery. Major Sladen tells me that he has found them breeding near Janis and Dudular in holes in the ravines.

Upupa epops. Hoopoe.

Common in summer. In the spring of 1917 I was not in a favourable position to observe, and the first Hoopoe was not seen till 10 April. In 1918 six were seen, 3 April. Still numerous, 19 September. The Hoopoes were very shy birds, but their preference for particular localities offered opportunities for observation. One or two could usually be found in the dense foliage of a line of willows fringing a small stream near the Struma. It was quite useless to try to stalk these birds at midday. They were most vivacious, and would fly from tree to tree forbidding a close approach. They were seen under the most favourable conditions on the hills, but even there their solitary, shy habits were well marked. I usually contented myself with listening to their peculiar voice. The call of the Hoopoe is a clear "coo-coo," or "coo-coo-coo." In tone it is between the monotonous cooing of the Doves and the clear penetrating voice of the Cuckoo, and with both these it might be very well confused.

Unlike the note of the Dove, in which the last syllable is

accentuated and sometimes raised in tone, the Hoopoe's notes are quite uniform. The double or triple note—or perhaps bar is the best word to use—is repeated a varying number of times. There may be a short “song” of only a dozen or even less bars, and these may be all of the triple or double kind. In a spirited bird the song is long, and the bird may be said to “*coo*” continuously for ten minutes or so. At first I was inclined to think that there was some method or significance in the use of the double or triple call, but a mass of statistics—if I may use the word—compiled later, gave poor results. For instance, a song of 62 bars included 8 triples, another of 69 included 12 triples, another of 145 bars included 99 triples and these scattered spasmodically through the song. Some charts I prepared showed little except that the triple bar is more constantly used by some individuals than by others. A pair of Hoopoes love making at Arachli made quite a different noise. They were fluttering about like gaudy butterflies on the edge of a small clearing. The male chased his mate from tree to tree. Both birds were very active, their tails spread and their crests mobile. During their gambols a succession of low harsh notes were heard.

Alcedo ispida. Kingfisher.

Seen commonly during the winter. According to Major Sladen it breeds near Hirsova.

Coracias garrulus. Roller.

Common in the summer. Seen 17 April. Its marked characters are the hoarse voice, erratic flight, and quarrelsome disposition. The outstanding feature with regard to its pugnacity was the antipathy shown towards the Jackdaws. Early arrivals in the spring were mobbed incessantly by smaller birds, and it was interesting to note the long processions of Starlings and Sparrows moving from tree to tree in the wake of a Roller. Quite a feud existed between the Rollers and Jackdaws wherever the two species were found together. The Roller is very active and fierce in the chase, and its clamour is even great enough to overwhelm

the noise made by the Jackdaws, which is quite an achievement when one considers the latter bird's capabilities in this direction. The Roller was always dominant in these affairs and usually the aggressor. The Jackdaws showed great skill in their attempts to escape from the Rollers. They would dart and topple about in every possible manner, and often double back along their own line of flight. Sometimes they would dive headlong into thick grass or into the foliage of trees. Such doings, however, were of little avail. The pursuing Roller would keep about a yard behind and forestall each caprice of the Jackdaws—even to the precipitous downward swoops. Later in the season, when the Rollers had progressed further with their domestic arrangements, they were not so quarrelsome. It should be noted that the Jackdaws had paired and settled down by the time that the Rollers commenced their activities, and I think that the valiant Daw of early spring would show a more determined front to the intruder. I found two nests in the ravine at Orljak in June. The birds showed the greatest craftiness in concealing their movements to and from the nests, which were in holes near the top of a cliff, and about fifty yards from the bottom of the ravine.

Bubo bubo. Eagle-Owl.

One remained in the vicinity of the river at Orljak for several days, at the beginning of January. This is the only personal record I have, but from all accounts I have no doubt that this Owl is frequently met with near Lake Doiran.

Asio accipitrinus. Short-eared Owl.

Seen from December to March on the Struma plain.

Carine noctua. Little Owl.

A common resident, and one of the most noticeable of Macedonian birds. This Owl is distributed over the country in haunts that differ widely in character. It is common on the Struma plain, especially in or near the villages, on the hills, and in the woods. I saw plenty on the outskirts of Salonica, and, indeed, this is one of the first birds to attract

attention on landing in the country, for several are almost sure to be met with whilst wandering over the boulder strewn land in the vicinity of the coast. A nest at Elisan on 1 June contained young a few days old.

[HARRIERS.—Harriers were very abundant on the plain, but they are most perplexing birds to a field naturalist, and only in cases of adults or birds in very characteristic phases of plumage could there be sure identification. The adult female of *Circus cyaneus* "Ringtail," and the immature *C. æruginosus* in that phase of plumage once designated "Moor Buzzard," *i. e.* dark brown with light head, were the most commonly seen.]

Circus cyaneus. Hen-Harrier.

Salonica (on the Seres road), in October. At Cavdah Mah and other places on the plain in December, January, and February. A pair suspected of nesting seen through July.

Circus pygargus. Montagu's Harrier.

Several times in the winter.

Circus æruginosus. Marsh-Harrier.

Noticed in December, January, and March, but found breeding by Major Sladen.

Circus macrurus. Pallid Harrier.

An adult male shot at the end of October.

Accipiter nisus. Sparrow-Hawk.

Not uncommon in winter, and most frequently seen in December. The outskirts of deserted villages at the edge of the plain were good localities for this species.

Buteo buteo. Common Buzzard.

Numerous in winter, and seen at intervals during the spring. Observed in a variety of situations: scattered over the hills (pairs were frequenting the wooded country at Paprat in October), on the plain, round the town of Salonica itself, and on the coast to the east of the town in December.

Milvus milvus. Kite.

A common resident, and as numerous on the level ground near Salonica as anywhere in the country.

The Allied troops who occupied Macedonia during the war had a very different method of living to the former inhabitants. The roads, which were strewn with the carcasses of ponies and mules etc. when British troops arrived in the country, were speedily cleared up, and as all refuse was afterwards destroyed with military precision, the country rapidly became more clean. Such a state of affairs was not congenial to the Kites, and their numbers seemed to decrease as the campaign proceeded, but some could usually be seen near the villages retained by the inhabitants.

Falco peregrinus. Peregrine Falcon.

Seen several times on the Struma plain in January and February.

Falco subbuteo. Hobby.

Frequent in the summer.

Falco æsalon. Merlin.

Seen occasionally in winter (December and January).

Falco tinnunculus. Kestrel.

Resident and far from uncommon, but less numerous than the smaller *F. naumanni*. It is evenly distributed over the whole district, and could be seen on the plains, hills, and near the old walls of Salonica. Like other Accipitres, it was especially numerous in the Struma valley. A pair nested in the ravine at Orljak, the nest being placed on a receding ledge of the cliff, about fifty yards from the ground, and quite unapproachable from the top. It was my experience that this species did not breed in the villages and that the next species was the bird which bred commonly under the roofs of native houses.

Falco naumanni. Lesser Kestrel.

This is one of the most conspicuous of the Macedonian summer birds. It is quite common and breeds freely, is

confiding and so noisy that it can scarcely escape notice. It was not seen in the winter months. This species is very partial to the villages on the Struma plain for the purpose of breeding. As early as 8 March a pair showed signs of settling down in the mosque at Ormanli. Mating was first noticed during the first week in April, but most frequent about 19th of the month. One nest contained two eggs on 22 April.

Falco vespertinus. Red-footed Falcon.

Common in the summer, and much more numerous than *F. subbuteo*.

[EAGLES.—These birds were a prominent feature of the bird-life on the Struma plain—in winter especially. It was not unusual for every post or bare tree within vision to be occupied by a lumpy looking Eagle, whose head was for ever turned in the direction of the river, watching the Ducks flying uneasily up and down. In severe weather in January 1917, Eagles were particularly numerous along the banks of the Butkova river. I could not identify *A. chrysaëtus* to my satisfaction, although I examined scores of large Raptores through a good telescope.]

Aquila heliaca. Imperial Eagle.

The most numerous Eagle. Resident. Conspicuous white scapulars denoted a fair proportion of adult birds. I skinned one bird (killed with a service bullet) and found the remains of a Coot in the stomach.

Aquila clanga. Spotted Eagle.

Small Eagles seen commonly on the plain were no doubt of this species, but it cannot be stated with certainty. An immature bird seen at close range on the hills at Karamatli (22 July) could have been no other. On 4 May a Spotted Eagle was having a great deal of trouble with a writhing snake which it was carrying. The snake was eventually dropped, but the Eagle did not descend for it again. Small Eagles could be seen at almost any time on the Struma plain.

Haliaëtus albicilla. White-tailed Eagle.

A fair proportion of the Eagles seen were of this species. Most numerous in winter, but seen in spring.

Hieraaëtus fasciatus. Bonelli's Eagle.

Common on the left bank of the Struma in winter. The light breast, which looks quite yellow at long ranges, is a good field point. I suspect that the "Ospreys" of my sportsman friends were usually examples of this Eagle. I kept a close watch for Ospreys, but was unsuccessful; but Major Sladen tells me in a letter that he has eggs—taken by an officer—from the hills to the south-east of Lake Doiran.

Neophron percnopterus. Egyptian Vulture.

Flocks consisting of a score or more of these birds were quite common in the summer. The species seemed to be most numerous in the direction of the Serbian frontier, where the state of the country must have been more congenial to their wants than the cleaner area occupied by the British forces. One sultry afternoon in April a flock of these Vultures remained in the air through a thunderstorm. The downpour of hail, which was particularly violent, made no appreciable difference to their easy manœuvring aloft.

Gypaëtus barbatus. Bearded Vulture.

Single birds seen on three occasions on the hills at Paprat in November. At close range the wedge-shaped tail is very conspicuous, and a uniform grey appearance serves to distinguish the species afar. The closest investigation of all large Raptores failed to reveal this species on the plain.

Gyps fulvus. Griffon Vulture.

Common, but usually seen at a great height over the Struma plain. Bursting shrapnel (anti-aircraft) caused them to mount to an even greater altitude. This species was only once seen under really favourable circumstances. This was in August, when a flock of eight birds descended into the valley at Baisili, attracted by the assembling of a large

number of Ravens and Egyptian Vultures ; but even on this occasion the Griffons remained well above the other birds present—circling round on practically motionless wings. Looking at them from my dug-out, high up on the adjoining hillside, it appeared to me that their light colour was their best distinguishing mark.

Vultur monachus. Black Vulture.

Probably more common than my few clear cases of identification would suggest—as most of the larger Vultures seen were very dark.

Phalacrocorax carbo. Cormorant.

Seen in January on the Struma. One shot.

Phalacrocorax pygmæus. Pygmy Cormorant.

Often seen in winter. One frequented the stream near Ormanli throughout February. This stream was shallow, and for the most part overgrown with vegetation. The Cormorant was very persistent in its habits, but very shy. It would take flight whenever there was a suspicion of danger, always flying quite away from the place.

Anser albifrons. White-fronted Goose.

Anser finmarchicus. Lesser White-fronted Goose.

I spent the greater part of the winter of 1916–17 on the Struma plain, and had plenty of opportunities for watching the Geese. Skeins were first commonly seen in October, and the number increased daily, regular flight-lines being established across the plain. At the end of February the number of Geese taking part in the daily flights was vastly in excess of that seen at the beginning of winter. On a few days I estimated that at least five thousand Geese passed over Ormanli (*i. e.* in one direction). I kept a daily record of the Geese seen. There was a great falling off in numbers 11 March (*circa*), and from 13 March onwards there were frequently blank days—days on which not a Goose was seen or heard. As late as 5 May, however, flocks could be

heard at night. Seven birds were examined during the winter. Four of these were Whitefronts. The other three were undoubted examples of the Lesser White-fronted Goose (all in February). They were very small and showed the characteristic features of *A. finmarchicus*. Most of the Geese seen on the plain seemed to be pretty well marked with black on the underparts. I have no evidence to support Major Sladen's notes as to the breeding of Grey Geese in Macedonia, nor have I any records of the Grey Lag Goose.

[DUCKS.—Good Duck-shooting was to be had on the Struma plain in winter. The majority of the fowl that came to the water near Ormanli in February were Mallard and Pintail, but a lot of Wigeon and Smew were killed during the month with a fair sprinkling of Pochards. I examined a good bag of Garganey and Shovelers on 20 March. The Ducks fell off in numbers in March, but a few could be seen on the plain right through the spring, and these comprised both diving and surface-feeding fowl. I left the plain in May. A large percentage of the Ducks on the Struma in January 1918 were Smew. During the day small parties of from two to four birds could be seen paddling about like Moorhens on the river. One or two fine adult males came to hand for identification at various times. The following species of waterfowl were common, but I can do little beyond giving a list as my dates are discontinuous.]

Anas boschas. Mallard.

Anas strepera. Gadwall.

Querquedula querquedula. Garganey.

Mareca penelope. Wigeon.

Spatula clypeata. Shoveler.

Dafla acuta. Pintail.

Nyroca ferina. Pochard.

Nyroca fuligula. Tufted Duck.

Mergus albellus. Smew.

Platalea leucorodia. Spoonbill.

A considerable number crossed the Struma—going east—on the evening of 23 May; they were travelling in parties of from 6 to 20 birds. Seen again in June. It is quite probable that I had overlooked these high flying Spoonbills for several weeks. At a good height, the flocks are very liable to be mistaken for flocks of Geese or Storks. This may seem rather ridiculous, but when the air was thick, the light failing, and the sky full of passing skeins of Whitefronts, it was a very easy mistake to make.

Ardea cinerea. Heron.

Seen in no great numbers along the course of the Struma and Butkova rivers, December and April.

Ardea purpurea. Purple Heron.

Odd birds seen near the Struma at intervals.

(I did not meet with any "White" Heron, but should say that I never visited the lakes.)

Botaurus stellaris. Bittern.

Occasionally on the Struma plain.

Ciconia ciconia. White Stork.

Noted on 13 May in the springs of 1917 and 1918. Breeds plentifully on the plain—almost always in trees. There were numerous nests at Kopriva, Orljak, Elisan, Dragos, and Ormanli. Some of the villages on the hills were not so favoured. At Ormanli there were 26 occupied nests on one side of the village alone. There were very few chimney-top nests in my district, although a few birds had nests on the church towers. Odd birds seen late in October.

Otis tarda. Great Bustard.

I only saw one, but from all accounts was unfortunate in not seeing more. A single bird flew over our camp on 7 April, at Alexia.

Otis tetrax. Little Bustard.

Seen commonly when once the right localities were found. On 4 May, one of these birds jumped out of the long grass

within twenty yards of a train, but all the others seen were extremely shy.

Burhinus œdicnemus. Stone-Curlew.

A common summer bird in some districts. Broken eggs at Gramatna on 18 June were well incubated.

Charadrius dubius. Little Ringed Plover.

Noticed in the dried-up river beds in April and May. Always alone or in pairs. Eggs during the first week in June. First bird seen 7 April at Orljak. All the Ringed Plovers seen were of this species. One bird suspected of having eggs was observed chasing a Swallow and was without doubt the aggressor.

Vanellus vanellus. Lapwing.

Common in winter.

Erolia alpina. Dunlin.

Struma plain in winter.

Tringa ochropus. Green Sandpiper.

Seen near the Struma in January, February, and March, but never really common. Other Sandpipers not noticed on the Struma plain.

Tringa totanus. Redshank.

Plenty seen in winter.

Tringa nebularius. Greenshank.

Fairly numerous near the Struma between Kopriva and Orljak in January.

Numenius arquata. Curlew.

Common in winter.

Gallinago gallinago. Common Snipe.

Numerous in winter. Pairs seen during the first week in April near Kurkut.

Limnocryptes gallinula. Jack Snipe.

Common in winter.

Scolopax rusticola. Woodcock.

In winter this bird is as numerous as the keenest sportsman could wish it to be.

Hydrochelidon nigra. Black Tern.

Terns seen on the Struma from June onwards were mostly of this species. I was shown eggs, taken from islands in the river, but could not identify them from memory as being assuredly Black Tern's. Major Sladen met with thousands of these Terns at Lake Ardzan, preparing to breed in May, and later had eggs sent to him from this place.

On the 4th of May—when travelling by train from Salonica towards Larissa—I passed two places well stocked with Terns. One place was on the marshes, near the point at which the railway crosses the Vardar (Karasuli, apparently where they are common, according to Major Sladen), and the other—a smaller colony—yet further from Salonica. From their behaviour at both these places I should say that the Terns contemplated breeding.

[GULLS.—Black-headed Gulls on the Struma from December to March were—I am almost sure—*Larus ridibundus*. Larger Gulls at Salonica throughout the winter (sp. ?).]

Gallinula chloropus. Moorhen.

A few that frequented a reed-bed near Ormanli in winter were the shyest birds I have ever met with.

Fulica atra. Coot.

Abundant on the rivers in winter. In January 1917 the Butkova River was swarming with Coots.

Puffinus kuhlii. Mediterranean Shearwater.

Gulf of Salonica in October.

Podiceps cristatus. Great Crested Grebe.

Plenty on the Struma in January.

Podiceps griseigena. Red-necked Grebe.

A pair seen several times in the Gulf of Salonica in November 1916.

Podiceps nigricollis. Black-necked Grebe.

A pair on a pond near Salonica, 4 May. Small Grebe on the Struma in January were probably of this species.

Colymbus sp. ?

Seen from the shore at Salonica in November.

Columba palumbus. Wood-Pigeon.

One record only, Hamzali in October.

Columba ænas. Stock-Dove.

Small flocks in winter. A large flock of Doves—attributed to this species—travelling north on 4 March, were flying rather low.

Streptopelia turtur. Turtle-Dove.

Common in summer, but avoiding the villages, thereby differing greatly from the next species. Quite a number bred in the Gramatna area. In many cases the nests were out on the hills a good distance from the villages. As late as 1 July I found several nests with eggs—in one case three eggs in the clutch. In the majority of cases the nests were built on branches that sprang out directly from the main trunk of a tree. They were often very accessible, being sometimes about six feet from the ground. Two nests were found, only separated by a distance of about as many yards, and one of them was so exceptionally frail that it was really wonderful that the eggs did not drop through it.

Streptopelia risoria. Collared Dove.

A common resident, but inclined to be local in distribution, which fact probably explains why Major Sladen did not meet with it. This Dove is most domesticated in its habits, spending the day pottering about the housetops and roosting in trees near by. When roosting they are easy to approach and could be knocked off the boughs by means of long sticks.

It is interesting to note that the present species and *S. turtur* were rarely found together in the same district—*i. e.*, in any numbers. A curious little trick associated with the courtship was noticed at the end of February. One bird—no doubt the male—would leave its mate sitting on a branch of a tall tree, and then flutter upwards for a few yards. The back would be turned towards the female, and the tail spread to its fullest extent. This display was always of short duration. The act of mating (in March) often took place on the very slender twigs at the top of tall trees. The male would absolutely pounce on the female, and then flutter round her in a small circle, after which he would alight on her back again with poised wings. In the spring it is difficult to find nests, for they are placed in large and very leafy trees. Later in the season, when the boughs are quite bare, they can be located with much greater ease.

Coturnix coturnix. Quail.

Some in February. Plenty in April and May. There is little doubt that a few Quails winter near the foothills. In May several pairs frequented an acre or so of very densely vegetated ground on the plain. There were huge thistles, of a kind that grows to the height of a man, growing in this place, and they were so thick that getting after the Quails was out of the question.

Perdix perdix. Partridge.

Common at all seasons, and more numerous in most districts than the next species.

Alectoris sp.? Partridge.

In some localities a red-legged Partridge is common at all seasons, but I often went over wide stretches of country without seeing a single bird. As I have no specimens from the Struma plain I hesitate to call these birds *A. graeca*.

Phasianus colchicus. Pheasant.

Seen in a few favoured localities only.

XII.—*Some preliminary remarks on the Velocity of Migratory Flight among Birds, with special reference to the Palearctic Region.* By Colonel R. MEINERTZHAGEN, D.S.O., M.B.O.U., F.Z.S.

THE question arises at once as to whether migratory flight is of a different nature to daily flight in search of food or to escape enemies. We have some interesting opinions on this subject. Gätke tells us that the speed of birds during their daily locomotions in the air has not an approximate relation to the wonderful velocity of flight attained by them during their migrations. He accounts for such enormous speed by the fact that birds migrate in the more elevated layers of the atmosphere, in which more uniform conditions prevail, and which are less subject to powerful meteorological disturbances.

Cooke ('Bird Migration'), on the other hand, thinks that migrating birds do not fly at their fastest. He believes that their migrating speed is usually from 30 to 40 miles an hour, and rarely exceeds 50. Flights of a few hours at night, alternating with rests of one or more days, make the spring advance very slow. He goes on to say that during day-migration the smaller land-birds seldom fly faster than 20 miles per hour, though larger birds move somewhat more rapidly.

I believe Gätke's theory to be based on faulty evidence, as I hope to show later. Moreover, birds would experience greater difficulties in flying in the "more elevated layers of the atmosphere," as the atmosphere is rarer and therefore offers a less suitable mixture on which their wings can beat. They would experience the same difficulties as a man trying to swim in froth.

My own observations tend to show that migratory flight differs very little in its velocity from the flight of daily movement, and I see no reason why it should or how it can be so. I believe migratory flight to be steady and unhurried, and

that birds only fly at their fastest when pursuing or when pursued. Anyone who has watched a Falcon being flown at a Rook will be struck by the speed which the usually leisurely-flapping Rook can attain from the moment he realizes he is the quarry.

I have seen Rooks travelling on migration, and accurate observation gives their pace as from 38 to 40 miles per hour. Now these migratory Rooks were travelling in their usual leisurely fashion, and not at anything like the speed they can use when attacked by a Falcon. All other migrations which I have witnessed in many and various parts of the world confirm my belief that migratory flight differs in no way from every-day movement, except that it is steadier and possibly a trifle slower.

So in dealing with this question, I shall consider estimates of any normal flight as the normal velocity which birds attain on migration. That birds can hurry I do not doubt, but such effort could not be long sustained, and would be of little use to them in the long-distance migratory journeys they are accustomed to take.

I shall first deal with those estimates of velocity which previous writers have recorded, but which cannot be regarded as reliable. Gütke claims that "Hooded Crows fly at 108 miles per hour and Bluethroats at 180 whilst on passage, and especially in the spring. He claims that Bluethroats pass from between 10 and 27 degrees of northern latitude to the 54th degree of northern latitude in nine hours. He also assumes that the American Golden Plover takes but fifteen hours from Labrador to northern Brazil, supporting this theory by his personal observations on Godwit and Curlew covering over 7000 yards in sixty seconds, or at the rate of over 4 miles a minute !

His estimate of Hooded Crow flight is based on the assumption that their line of flight is from east to west over Heligoland, and that they make for the east coast of England. This apparently is not the case, for their line of autumnal flight over Heligoland is from north-east to south-west, and these are probably not the birds which

arrive in such numbers on our central east coast. The Bluethroat estimate is based on the assumption that birds fly direct from Egypt to Heligoland in one night, which is certainly not the case. His estimate of the flight of Godwit and Curlew, on which he bases his estimate of the flight of the American Golden Plover, is, I fear, but an example of the tremendous enthusiasm of this charming character for his subject.

But Gätke is not alone in over-estimating the velocity of flight. Many other writers have erred through basing a theory on bad evidence or no evidence at all, one of the most remarkable of these being Crawford ('Round the Calendar in Portugal'), who convinced himself that Turtle-Doves flew at such an astonishing pace that by leaving Kent at dawn they would be in Portugal a few hours later!

As regards more accurate data, it was my fortune during the recent war to have the opportunity of using anti-aircraft arrangements for my purpose. It was excellent practice for the men, and the results can be taken as accurate for all practical purposes. In conjunction with observations of an accurate nature from other sources, I have compiled the following table.

Unless the authority is stated in brackets, the observations are my own.

The following notes refer to the table:—

- NOTE A. Observations taken at Quetta by two persons with stop-watches over a measured distance varying from 400 to 660 yards. All birds were below 1000 feet, and in no case were they migrating.
- NOTE B. Observations taken in East Africa in the autumn of 1915 on migrants by using theodolites on a base of 1200 feet.
- NOTE C. Observations made at Dar-es-Salaam by a system of two persons with stop-watches stationed 440 yards apart and timing birds flying between points aligned by two stakes. All observations taken on still evenings when birds were flying to and from their breeding-grounds.
- NOTE D. Observations made near Rafa in southern Palestine during the autumn of 1917 by means of theodolites at two anti-aircraft gun-stations on a base of 3926 feet, the stations being connected by telephone.

NOTE E. Observations taken in southern Palestine by stop-watches at 440 yards distance and timing birds flying between two points aligned by posts.

NOTE F. Observations made near Montreuil in north-east France by means of theodolites on a 1420-foot base and small balloons to ascertain the velocity of the wind at the altitude of flight. All birds believed to be on migration.

Species.	Place.	Ground speed : m.p.h.	Remarks.
Ravens	S. Palestine.	32-39 $\frac{1}{2}$	Eleven observations. Birds passing to and from roosting. Wind calm. Altitude of flight 310-840 feet. See note D. —
Rooks	N.E. France.	*45	Taken with air-speed indicator from aeroplane. (R.A.F.)
Rooks	do.	39	Altitude of flight 1740 feet. Wind 17 m.p.h. side. See note F.
Rooks	do.	38	Altitude of flight 2120 feet. Side wind of 31 m.p.h. See note F.
Rooks and Jack-daws.	do.	40	Altitude of flight 690 feet. Slight side wind on ground. See note F.
Rooks	do.	39 $\frac{1}{4}$	Altitude of flight 2008 feet. Head wind 12 m.p.h. See note F.
Hooded Crow	Rossitten.	31·5	Average of observations on 20 birds. (<i>Thienemann</i> .)
Jackdaw	do.	39·6	Average on several birds. (<i>Thienemann</i> .)
Chough	Quetta.	11 $\frac{1}{2}$	Very strong head wind. See note A.
Starling	do.	43-49	Thirteen observations. Wind calm. See note A.
Starling	S. Palestine.	45-48 $\frac{1}{2}$	Twenty-two observations. Altitude of flight 120-325 feet. Wind calm. See note D.
Starling	Rossitten.	46·5	A single bird. (<i>Thienemann</i> .)
Rose-coloured Starling.	Quetta.	38, 40 $\frac{1}{2}$	Two observations. Weather calm. See note A.
Finches	Rossitten.	33	Six observations. (<i>Thienemann</i> .)

* Air-speed.

Species.	Place.	Ground speed : m.p.h.	Remarks.
Crossbill	Rossitten.	37·5	Average of two observations. (<i>Thienemann</i> .)
Corn-Buntings ...	Palestine.	29½	Average of two observations. Birds flying to water. See note E.
Calandra Lark ...	do.	34	Average of three observations. Birds coming from water. See note E.
Red-throated Pipit.	East Africa.	26·5	Altitude of flight 210 feet. Wind calm. See note B.
Red-throated Pipit.	Palestine.	20¼	Birds coming to water. Average of two observations. See note E.
Pipits	Tuscar Rock.	20	(<i>Patten</i> , 'Zoologist.')
Wagtails	East Africa.	30·1	Altitude of flight 160 feet. Slight following wind. See note B.
Wagtails	do.	29	Altitude of flight 240 feet. Calm. See note B.
Swallow	France.	106	A Swallow was taken from Roubaix to Paris. distance 160 miles, and returned to Roubaix 90 minutes after its liberation. (<i>'Zoologist,'</i> 1887, <i>ex 'Globe.'</i>)
Swallow	East Africa.	37¾	Altitude of flight 235 feet. Wind calm. See note B.
Swallow	do.	34	Flying at ground-level. Strong head wind. See note B.
Swifts	Mesopotamia.	well over 68	Large flock at 6000 feet, feeding over Mosul. They circled round machine and easily overtook it. Flying speed 68 m.p.h. (R.A.F.)
Roller	East Africa.	38·7	Altitude of flight 720 feet. Slight head wind. See note B.
Lanner Falcon ...	S. Palestine.	48	Bird not hunting. See note E.
Kestrel	East Africa.	40½	Altitude of flight 210 feet. Weather calm. See note B.
Kestrel	do.	43·9	Altitude of flight 310 feet. Weather calm. See note B.
Kestrel	do.	22	Altitude of flight 150 feet. Strong head wind. See note B.
Marsh-Harrier ...	Quetta.	31, 36	Observations on two males hunting. Weather calm. See note A.
Marsh-Harrier ...	S. Palestine.	37½	Single bird hunting. See note E.

Species.	Place.	Ground speed : m.p.h.	Remarks.
Lammergeier	Quetta.	79½	Gliding to food at angle of 12 degrees to horizontal. Strong side wind. See note A.
Lammergeier	Italy.	*110	Bird nose-diving to escape from a pursuing aeroplane. Observation taken with air-speed indicator. (R.A.F.)
White Stork	Mesopotamia.	*48	Birds on spring passage at 4200 feet over Baghdad. Birds drew in their necks and legs when machine was near. (R.A.F.)
Grey Heron	France.	under *45	By air-speed indicator. (R.A.F.)
Gannets	Eastbourne.	*48	By air-speed indicator. (R.A.F.)
Pelican	S. Palestine.	51	Altitude of flight 1240 feet. A side wind of 15 m.p.h. See note D.
Geese	?	44·3	Altitude of flight 905 feet. Measured by theodolite. (<i>Clayton</i> , 'Science,' n. s., vol. v. No. 105.)
Geese	France.	*55	By air-speed indicator. (R.A.F.)
Geese and Duck ...	Mesopotamia.	42-48, slightly faster.	Frequent observation by air-speed indicator. Birds usually on passage, but all below 3000 feet. (R.A.F.)
Geese	France.	50½	Altitude of flight 4210 feet. Head wind of 9 m.p.h. See note F.
Duck	?	47·8	Altitude of flight 958 feet. Measured by a special theodolite. (<i>Clayton</i> , <i>ibid.</i>)
Duck	Quetta.	51-59	Eleven observations. Wind calm. See note A.
Brent Geese	Scotland.	*45	By air-speed indicator. (<i>Wynne</i> .)
Mallard	?	*50	By air-speed indicator. Birds believed to be on passage. (<i>Wynne</i> .)
Mallard	France.	under *50	By air-speed indicator. (R.A.F.)
Teal	S. Palestine.	44	Single bird flying low and leisurely. See note E.
Houbara Bustard .	Quetta.	42½	A single bird. Wind calm. See note A.

* Air-speed.

Species.	Place.	Ground speed : m.p.h.	Remarks.
Stock Dove	S. Palestine.	42 $\frac{1}{4}$	Fairly strong head wind. Bird flying to water. See note E.
Turtle-Dove	Sinai.	37	Several tests made on birds flying their best alongside a train. Speed of train obtained from kilometre posts. No record of wind.
Sand-Grouse (<i>Pt. orientalis</i>).	Quetta.	43 $\frac{3}{4}$	Bird flying from water. Slight head wind. See note A.
Sand-Grouse (<i>Pt. senegallus</i>).	S. Palestine.	47 $\frac{1}{2}$	Bird flying from water. Altitude of flight 460 feet. Weather calm. See note D.
Pheasant	---	33.8	Experiment in covered gallery. ('Field,' Feb. 1887.)
Pheasant	---	38.1	Experiment in the open. ('Field,' Feb. 1887.)
Partridge	---	32.1	Experiment in the open. ('Field,' Feb. 1887.)
Partridge	---	*40	By air-speed indicator. (R.A.F.)
Quail	Mediterranean.	57	Timed at sea over 500 yards distance. Birds on passage. (<i>Lynes</i> , Brit. B. vol. iii.)
Geoffroy's Plover (<i>Ch. geoffroyi</i>).	Palestine.	34	Timed by speedometer in the Bay of Acre, birds flying directly in front of the car. Birds could be pressed up to 39 m.p.h., after which the car could overtake them. Wind calm.
Kentish Plover ...	do.	34	Same as for Geoffroy's Plover.
Caspian Plover (<i>Ch. asiaticus</i>).	East Africa.	51	Birds flying very low on passage. Wind calm. See note B.
Caspian Plover ...	do.	47	Birds flying at 480 feet. Strong side wind. Birds on passage. See note B.
Dotterel	S. Palestine.	45. 50 $\frac{1}{2}$	Two observations. Birds flying very low. Strong side wind of 11 and 21 m.p.h. respectively. See note D.
Golden Plover ...	England.	*60	Birds being pressed. By air-speed indicator. (<i>Wynne</i> .)

* Air-speed.

Species.	Place.	Ground speed : m.p.h.	Remarks.
Pacific Plover (<i>Ch. dominicus</i>).	Pacific.	50-75	Not founded apparently on accurate observation. (<i>Henshaw</i> , <i>Smithson. Inst. Rep.</i> 1910.)
Lapwing	S. Palestine.	37	Single bird, flying against head wind of 12 m.p.h. Altitude of flight 860 feet. See note D.
Lapwing	France.	50	Altitude of flight 5500 feet. Flying against a north wind on spring passage. Means of estimate unknown. (<i>Portal</i> , 'Field,' 17. iii. 17.)
Lapwing	do.	*40-45	Observation by air-speed indicator. (R.A.F.)
Lapwing	do.	42	Altitude of flight 1410 feet. Slight side wind at ground-level. See note F.
Little Stint	East Africa.	49	One observation. See note C.
Terek Sandpiper ...	do.	48-51	Four observations. See note C.
Greenshank	do.	46, 49	Two observations. See note C.
Marsh-Sandpiper ..	do.	48, 51, 51½	Three observations. See note C.
Oystercatcher ...	do.	45-49	Seven observations. See note C.
Curlew	do.	42-48½	Seventeen observations. See note C.
Whimbrel	do.	43-52	Nine observations. See note C.

* Air-speed.

So much for observations on the flight of wild birds. I shall now briefly record some of the more accurate observations on the rate of flight of Carrier Pigeons.

Tegetmeier declares ('Field,' 22. i. 87) that the average speed of Carrier Pigeons is 36 miles per hour, whilst on two occasions a speed of 55 miles per hour was maintained for four hours in succession.

From experiments carried out in a covered gallery ('Field,' 1887, p. 242) it was shown that a Pigeon flew at 33·8 miles per hour, whilst in the open another flew at 27·9 miles per hour.

In the 'Homing Fancier's Annual' of 1892 it was recorded that in covering 82 miles in good weather a bird maintained

just over 71 miles per hour. From the Scilly Islands to Wiltshire (215 miles) a bird kept up a speed of $50\frac{1}{2}$ miles per hour. In 170 miles a bird made 54 miles per hour, and in 104 miles it made $57\frac{1}{2}$ miles per hour. In a race from Banff to Hampshire a bird maintained 62 miles per hour in very favourable weather. Finally, a celebrated bird called "Volonel" on two occasions maintained over 60 miles per hour.

Doubtless other figures have been published, but I have been unable to trace them. From the data available it appears that the normal velocity of a Carrier Pigeon is from 30-36 miles per hour, but that when "homing" they can attain up to 60 miles per hour or over. Again arises the question as to whether migrants can accelerate their speed when actually migrating, in the same manner that a "homing" Pigeon can hurry on its way when "homing." For reasons already given, I do not think they do, and there is certainly no evidence which even suggests it. The cases of Rooks in the above table were certainly those of migrating birds, and indicate no hurry. The Rossitten birds were all on passage, and show no excessive speed. In fact, the only excessive speeds we have in the table are those of the two Lammergeier which were taken under abnormal conditions, the Golden Plovers which were escaping pursuit, and the Roubaix Swallow. It is remarkable that this bird was also "homing," which may account for such an abnormal speed. But Swallows are most deceptive birds as regards their flight. They are in reality neither strong nor rapid fliers, and personally I do not attach too much reliance in the data of the Roubaix Swallow. I do not believe any Swallow is capable of anything approaching that speed unless assisted by a tail wind of 30 or 40 miles an hour, which, as is well known, is a hateful condition to a travelling bird.

The case of the Mosul Swifts is interesting. The birds were probably not on passage, but simply feeding. It is known that Swifts travel great distances in search of food and ascend great altitudes. In the Middle Atlas of Morocco, in the Himalayas, in Crete and Palestine, 4000 or 5000 feet

and 50 miles or so in distance seems nothing to these incomparable fliers. I have had splendid opportunities of observing both the Alpine, Common, and Spine-tailed (*Chaetura*) Swifts, and it has been a great disappointment to me that I have never been able to get a satisfactory estimate of their rate of flight, as they never continue on an even course. On a small island off the coast of Crete, I was recently given a good exhibition of what an Alpine Swift can do. I was watching some of these birds feeding round cliffs in which several pairs of Eleonora's Falcon were about to breed. Now, this delightful Falcon is no mean flier, and as these Swifts passed their cliff, the Falcons would come out against them like rockets. The Swifts would accelerate, and seemed to be out of sight before the Falcons were well on their way. So confident were the Swifts in their superior speed, that every time they circled round the island they never failed to "draw" the Falcons, and seemed to be playing with them. I may add that these same Falcons have little difficulty in overhauling and striking a Rock-Pigeon—itself no mean performer. I have also seen on record the case of Falcons and Swifts somewhere in India, when the former failed time after time to come up with his quarry. I unfortunately cannot trace the reference.

I hesitate to even guess at the speed to which a Swift can attain when the necessity arises, but the main point is that this, the fastest of birds, can increase his "feeding" speed of, say, 70 miles per hour to a velocity which must exceed 100 miles per hour. There is little doubt that the speed of the Golden Plover in the table is an accelerated speed. Pilots in Mesopotamia have told me that whereas Geese cannot to any great extent accelerate, Duck, when pressed, could attain a speed of about 60 miles per hour.

To conclude, I find that birds have two speeds—a normal rate which is used for every-day purposes and also for migration, and an accelerated speed which is used for protection or pursuit, and which in some cases nearly doubles the rate of their normal speed. Some of the heavier birds

can probably only accelerate to a slight extent. In this conclusion I am naturally excepting "courtship" flight, which is usually of an accelerated nature.

I also find, after eliminating abnormal conditions and observations based on meagre evidence, that the normal and migratory rate of flight in miles per hour is as follows:—

Corvidæ	31-45	Starlings	38-49
Smaller Passeres.	20-37	Falcons.....	40-48
Geese	42-55	Ducks	44-59
Tame Pigeons ...	30-36	Sand-Grouse ...	43-47
Waders 34-51, but mostly from 40-51.			

XIII.—*Field Notes on the Birds of Lower Egypt.* By W. RAW, M.B.O.U. *With Contributions by Colonel R. SPARROW, C.M.G., D.S.O., M.B.O.U., and the Rev. F. C. R. JOURDAIN, M.A., M.B.O.U.*

FROM August 1915 until April 1919 I was resident at the Wireless Station of Abu Zabal. The village of that name is situated some twenty miles north-east of Cairo, and my quarters were a further mile in the same direction, right on the Cairo-Ismailia canal, where it skirts the edge of the desert. Thus I had easy access to the cultivation, desert, and palm-groves, while some two hundred acres of useful swamps (known as the Birket Accrashi) were within half-an-hour's walk. The locality was therefore ideal for ornithological observation.

Throughout my stay I kept a daily diary, and the following notes are culled from its pages. I endeavoured to secure as much information on the breeding birds of Egypt as I could, and for the purpose of putting my observations and other information on record, I propose to include all my oological data in this paper, although much of it was secured outside the six-mile area included in the Abu Zabal district. Due reference will be made to such divergences.

To my friend Mr. J. Lewis Bonhote, M.A., F.L.S., F.Z.S.,

M.B.O.U., I am deeply indebted for much kindly assistance in many ways. His thorough knowledge of the Birds of Egypt, his genial hospitality, and advice were ever at my disposal, and I shall always associate him with any success which fell to my lot. Mr. M. J. Nicoll, M.B.O.U., and Captain S. S. Flower, F.L.S., M.B.O.U., of the Egyptian Zoological Service, also rendered me many kindnesses which I gratefully acknowledge.

I must also pay tribute to Lieut. D. Paton, Major P. H. Manson-Bahr, D.S.O., M.B.O.U., Captain W. Shipton, M.B.O.U., Captain W. Bigger, M.C., M.B.O.U., Major F. W. Borman, M.B.O.U., Lieut. D. W. Musselwhite, M.B.O.U., and Dr. Beven, all of whom assisted me in many ways, and in whose company much of my work was done.

The Rev. F. C. R. Jourdain, M.A., M.B.O.U., has kindly revised the nomenclature and furnished the list of literature.

The supplementary notes in square brackets on the breeding of Egyptian birds are from observations made by Col. Sparrow in the years 1893-94, 1908-09, and refer with few exceptions to the Delta or the desert bordering it. As these notes agree closely with my own, it was not thought necessary to confirm my observations in all cases, but his remarks are confined to those instances in which additional information was available or some divergence of habits noted.

The nomenclature adopted is that of the International Rules, and in the main we have followed Hartert's 'Vögel pal. Fauna,' with some necessary modifications.

The order followed is that of this work, and a list of the principal notes and papers on the Ornithology of Lower Egypt is also appended. It is not intended to be exhaustive, and only those papers which are likely to be useful to British ornithologists and are readily accessible are included :—

1859. E. Cavendish Taylor. *Ibis*, pp. 41-55. Ornithological Reminiscences of Egypt.
 1860. " " " *Ibis*, p. 199 (Corrections).
 1861. J. Carafy. *Ibis*, p. 210 (Letter on *Budytes cinereo-capillus* and *Chettusia leucura*).

1862. S. Stafford Allen. Ibis, pp. 357-361. Notes on the Birds of Egypt.
1863. „ „ Ibis, pp. 32-34, 156-7. Notes on the Birds of Egypt.
- „ „ „ Ibis, pp. 363-4 (Letter on *Cuculus glandarius*). Idem by J. H. Cochrane (pp. 361-3).
1864. „ „ Ibis, pp. 97-8. On *Acrocephalus stentorius* (pl. I.). *T. c.* pp. 233-243. Remarks on Dr. A. L. Adams's Notes and Observations on the Birds of Egypt and Nubia.
- „ A. Leith Adams. Ibis, pp. 1-36. Notes and Observations on the Birds of Egypt and Nubia.
- „ J. H. Cochrane. Ibis, pp. 183-184. Note on the Nesting of the Lanner Falcon (pl. IV.).
1867. E. Cavendish Taylor. Ibis, pp. 48-73. Egypt revisited.
- 1869-74. T. v. Heuglin. Ornithologie Nordost-Afrikas. 2 vols. Cassel.
1870. R. B. Sharpe. Ibis, pp. 421-435. Critical Remarks on Dr. v. Heuglin's "Ornithologie N.O.-Afrikas."
- „ G. E. Shelley. Ibis, pp. 149-150, 445-448 (Letters on *Elanus caeruleus* and *Cypselus pallidus*, etc.).
1871. „ „ Ibis, pp. 38-54, 131-147, 309-319. Contributions to the Ornithology of Egypt.
1872. „ „ A Handbook to the Birds of Egypt. London.
1874. T. v. Heuglin. J. f. O. pp. 46-54. Bericht über "A Handbook to the Birds of Egypt."
1876. J. H. Gurney. Rambles of a Naturalist in Egypt and other Countries [pp. 84-245]. London, n.d.
1878. E. Cavendish Taylor. Ibis, pp. 368-374. A few additional Notes on Birds of Egypt.
1886. „ „ Ibis, pp. 378-380 (Letter on visit to Egypt).
1889. Crown Prince Rudolf of Austria (transl. by C. G. Danford). Notes on Sport and Ornithology (pp. 229 etc., 503 etc.). London.
1891. E. Cavendish Taylor. Ibis, pp. 473-475 (Letter on 6th visit to Egypt).
1892. G. Schrader. Orn. Jahrb. pp. 41-54. Ornitholog. Beobachtungen auf meinen Sammelreisen. V.
1896. E. Cavendish Taylor. Ibis, pp. 477-482. A few Notes on Birds of Egypt from observations made at Cairo, etc.
1905. W. L. S. Loat. Ibis, pp. 452-461. On a small collection of Birds from the Wadi-en Natrûn.
1906. „ „ Ibis, pp. 113-124. On a small collection of Birds from the vicinity of Lake Menzaleh.

1907. A. Koenig. J. f. O. pp. 59-91. Die Geier Aegyptens.
T.c. pp. 391-469, 549-582, Die Falconiden
Aegyptens.
1908. M. J. Nicoll. Ibis, pp. 490-510. Contributions to the
Ornithology of Egypt, No. 1. Lake
Menzaleh.
1909. " " Ibis, pp. 285-302, 471-484, 623-649. Con-
tributions to the Ornithology of Egypt,
No. 2. Birds of the Province of Giza
(3 parts).
1909. C. Whympers. Egyptian Birds for the most part seen in the
Nile Valley. London.
1912. C. B. Ticehurst. Zool. pp. 41-59. The Birds of Lower Egypt.
- " M. J. Nicoll. Ibis, pp. 405-453. Contributions to the
Ornithology of Egypt, No. 3. The Birds
of the Wadi Natron.
- " H. Lynes. Ibis, pp. 121-187. Field Notes on a Collec-
tion of Birds from the Mediterranean
[partim].
1917. A. W. Boyd. Ibis, pp. 539-557. Birds of the Suez Canal
Zone and Sinai Peninsula.
1918. S. S. Flower and The Principal Species of Birds protected by
M. J. Nicoll. Law in Egypt. Cairo.
1919. M. J. Nicoll. Hand List of the Birds of Egypt. Pub.
No. 29. Cairo.
1919. A. Koenig. J. f. O. pp. 431-485. Die Sperrschnäbler
(Fissirostres) Aegyptens.

For lists of earlier works on this subject see Ornithologie Nordost-Afrikas,
Bd. I. pp. xevii-eviii.

F. C. R. JOURDAIN.

1. *Corvus corax umbrinus*. Brown-necked Raven.

Abu Zabal was not a suitable place for these birds, but I occasionally saw them there. A family party would often appear in June, and stray birds at different times during the year. I found a clutch of four eggs in a nest on a cliff in the Moqattam Hills on 2 April, 1918, and another clutch was taken by a native, in my presence, from a nest on a rocky scarp near the Pyramids on 28 March, 1918. Captain W. Bigger found fresh eggs in a well on the Suez road on 12 March, and another well-incubated clutch in the Moqattam Hills on 21 April. He also found fresh eggs at Luxor on 22 February, 1917.

[This bird was quite common between Ne Fiché and Suez on 3 August, 1919. My dates for full clutches of four eggs each near Abbassia are 20 April, 1894, and 19 April, 1910. Three eggs from Luxor were taken 27 March, 1909. Most of these eggs are paler than those of the Hooded Crow.—R. S.]

[The small size of the eggs of this race as compared with those of other forms of Raven is remarkable. Average of 17 Egyptian eggs: 44.49×31.58 mm. British eggs average 49.8×33.5 mm. Some eggs have a very pronounced blue ground, while others are barely distinguishable from the paler type of Hooded Crow's egg.—F. C. R. J.]

2. *Corvus cornix cornix*. Hooded Crow.

Common and resident. One bird made a hobby of flying off with stray tennis-balls from our court, and quickly ruined them. Begins to breed early in March, and I have found eggs as late as 6 June. Five is the largest number of eggs found in any nest.

[My earliest date for eggs is 7 March, 1909 (2 fresh eggs at Helouan). In the Fayûm I found fresh eggs on 29 and 30 March, 1910. Four is the normal clutch, but I have twice taken five. Eggs vary from almost pure blue to the ordinary type.—R. S.]

3. *Sturnus vulgaris* subsp.? Starling.

Although this bird was common during the winter months I appear to have omitted to secure any specimen at Abu Zabal, and cannot say definitely which subspecies those seen belonged to. One obtained at Tanûa el Fayûm in February 1919 was identified as *S. v. poltaratskyi*.

4. *Oriolus oriolus oriolus*. Golden Oriole.

This species passes through Abu Zabal about the first week in May and again in late September, but is never very numerous.

5. *Chloris chloris* subsp.? Greenfinch.

Observed on one occasion only. This was a single bird seen in an apricot-orchard on 16 February, 1916.

6. *Carduelis carduelis*. Goldfinch.

Uncommon at Abu Zabal. I saw a pair near there on 20 April, 1916, and several times during the winter near Shebin-el-Qanater. Mr. M. J. Nicoll showed me a nest, on which the bird was sitting, in a tree overhanging the tram-lines outside the Zoological Gardens at Giza, on 6 March, 1917.

[Mr. Nicoll showed me a nest with eggs in the Giza Gardens on 24 April, 1910.—R. S.]

7. *Carduelis cannabina mediterranea*. Linnet.

Large flocks haunt the stubble-fields throughout the winter, usually arriving in mid-October and departing in March or April.

8. *Serinus canarius serinus*. Serin Finch.

A flock of from thirty to fifty spent the winter annually in some tall trees near my quarters, arriving early in November and departing early in March.

9. *Erythropsiza githaginea githaginea*. Desert Bullfinch.

[This species was common at Luxor in December 1909, and most probably breeds in the neighbourhood.—R. S.]

10. *Fringilla cœlebs cœlebs*. Chaffinch.

Small parties were met with during the winter months, being most numerous during January and February.

11. *Passer domesticus niloticus*. Egyptian House-Sparrow.

Abundant throughout the year. Breeds from early April to late June. There is a great range of variation in the eggs. I obtained three sets of five eggs and took another containing six, but four were more common.

[In the Fayûm I took many clutches on 28 March, 1910, and at Luxor on 31 March. My earliest date for Abbassia is 21 March, 1909. Four appears to be the normal clutch, but I have one set of six from the Fayûm.—R. S.]

12. *Passer hispaniolensis hispaniolensis*. Spanish Sparrow.

Huge flocks winter at Abu Zabal, roosting in the reed-beds.

13. *Sporæginthus amandava*. Amaduvade Finch.

This species is not, of course, indigenous, but now breeds wild in the gardens at Giza, and is numerous at the Barrage over the Nile. It appears to be spreading, and breeds regularly at Inchas, where I have seen young just out of the nest. I took several clutches of eggs at the Barrage on 14 August, 1917. All were fours except one, which had five eggs.

14. *Emberiza calandra calandra*. Corn-Bunting.

A common winter visitor, large numbers roosting in the reed-beds. Remains as late as 5 April.

15. *Emberzia hortulana*. Ortolan.

Passes through Abu Zabal on both migrations, being most numerous about mid-September and rarer in mid-April.

16. *Emberzia cæsia*. Cretzschmar's Bunting.

Seen as early as 27 August, and is more numerous than the preceding species in autumn and also in spring.

17. *Calandrella brachydactyla brachydactyla*. Short-toed Lark.

During some winters this species winters at Abu Zabal, when it is to be seen in large flocks. Other years it passes through in October, and returns in March on its way north. I saw an Italian "sportsman" shoot no fewer than twenty-eight at a single discharge.

18. *Calandrella brachydactyla longipennis*. Long-winged Short-toed Lark.

I have shot specimens of this bird out of flocks of the preceding subspecies, and the remarks on it are applicable to this also.

19. *Ammomanes deserti isabellina*. Desert-Lark.

Messrs. Bahr, Bigger, and Borman caught some young birds of this species which had just flown, on 22 April, 1919, in the Moqattam Hills near Abbassia.

[I only found the nest of this species on one occasion—on 16 May, 1910—and, unfortunately, the bird deserted. The nest was on a rocky ridge not far from the Moqattam Hills, and was placed on the ground between some flat rocks, the edge of the nest being surrounded by small stones. Young a few days old were observed on 25 May, 1910, and a fully-fledged young bird on 28 May. This species was common in the Wady Hof on 5 May, 1909, but appeared not to have then laid.—R. S.]

20. *Ammomanes phœnicurus arenicolor*. Gould's Desert Lark.

[I observed this bird near Abbassia in January and February, 1910. Mr. Nicoll obtained a fully-fledged young bird in the Wadi Natrûn on 25 May, 1910.—R. S.]

21-24. *Galerida cristata nigricans*, *altirostris*, *mœritica*, and *caroli*. Egyptian Crested Larks.

Common and resident. Abu Zabal appears to have both *G. c. nigricans* and *G. c. altirostris*, and I have frequently observed what appeared to be birds referable to both subspecies obviously paired. The latter lighter type was more numerous. I have specimens of both forms shot at the same place. They breed from the first week in April until the end of May, but on one occasion I saw young birds on the wing on 10 April.

I found eggs of *G. c. mœritica* in the Fayûm Province on 14 March, 1917, and saw *G. c. caroli* feeding young in the Wadi Natrûn in mid-May, 1918. I never found more than four eggs in a nest, and usually only three, but Mr. J. L. Bonhote found a five clutch near the coast.

[*G. c. nigricans*. My earliest date is for two eggs at Abu Roash on 22.iii.09; my latest date for several clutches is Inchas 29.v.19. Three appears to be the normal clutch, though I have two clutches of four. There is great variation between different clutches.

G. c. mœritica. One egg fresh near Lake Qarûn, 30.iii.10; two clutches of two hard-set, 31.iii.10.—R. S.]

25. *Alauda arvensis arvensis*. Skylark.

Occasionally observed in small parties in winter. Usually feeding in the growing corn. Two shot on 16 October, 1916.

26. *Alaemon alaudipes alaudipes*. Bifasciated Lark.

First seen on 27 August, 1916, when I shot a pair of young birds. On 4 August, 1917, I shot another immature bird. From October until February inclusive, in the winter of 1917-18, five or six birds were daily observed from the windows of my quarters, feeding on the desert scrub, but did not appear to breed anywhere near.

[The bird was not uncommon in the desert in April and June, 1894, and odd birds were observed in February and November, 1909. I do not think it breeds near Cairo. I am indebted to Mr. Nicoll for two fresh eggs taken in the Wadi Natrûn on 6. vi. 10 by M. Balboni, which closely resemble the eggs of *Lanius e. elegans*, but are more elongated.—R. S.]

27. *Anthus richardi richardi*. Richard's Pipit.

Met with only once, when I saw Mr. J. L. Bonhote shoot a specimen whilst snipe-shooting on the Birket Accrashî on 26 January, 1917.

28. *Anthus campestris campestris*. Tawny Pipit.

Numerous during both migrations passing through Abu Zabal in September-October and March-April. Single birds met with in December.

29. *Anthus trivialis trivialis*. Tree-Pipit.

Uncommon and rarely obtained. One shot on 11-17 October, and another on 16-18 April.

30. *Anthus pratensis*. Meadow-Pipit.

Rarely observed. A specimen shot on 9 February, 1917.

31. *Anthus cervinus*. Red-throated Pipit.

Very abundant throughout the winter, arriving about mid-October and departing about the end of April.

32. *Anthus spinoletta coutellii*. Alpine Pipit.

Only less numerous than the preceding species, with which it arrives and departs. Roosts in the reed-beds and in the long grass bordering swamps.

33. *Motacilla flava flava*. Blue-headed Yellow Wagtail.

This species was noted several times during the autumn migration in September. Large numbers of Yellow Wagtails congregated on the reeds in the Birket Accrashi during September, but the majority were birds of the year, and difficult to identify—even when shot.

I am not certain, but think that *M. f. cinereocapilla* occurred amongst them. Less numerous in spring.

34. *Motacilla flava pygmæa*. Egyptian Yellow Wagtail.

Numerous throughout the year, but becomes scarcer in the breeding-season at Abu Zabal. Numbers breed, however, at Marg and Inchas, but I never found their eggs myself. I have, however, a clutch of four eggs of this species taken by Dr. Beven of Cairo, near the Pyramids, on 19 April, 1918.

[The full clutch of this race appears to be four eggs. My dates for fresh eggs are 28 April, 1894, and 10 April, 1910. Fully-fledged young 14 April, 1909. Nests commonly in the cultivation, especially near the Pyramids.—R.S.]

35. *Motacilla flava melanocephala*. Black-headed Yellow Wagtail.

Seen in the spring only. Large numbers were observed at the Birket Accrashi on 13 April, 1918, when I obtained several which were perched high up in a Lebak-tree.

36. *Motacilla cinerea cinerea*? Grey Wagtail.

Observed singly and sparingly during the winter months.

37. *Motacilla alba alba*. White Wagtail.

Large numbers of these birds winter at Abu Zabal, arriving early in October, and departing about the middle

of April. From two marked birds I was able to satisfy myself that they spend the winter in a particular place and do not wander far. I obtained an albino specimen in 1919.

38. *Lanius minor*. Lesser Grey Shrike.

I only met with a single specimen in Egypt, which I shot at Abu Zabal on 29 April, 1918.

39. *Lanius excubitor elegans*. Pallid Shrike.

This bird was not uncommon at Abu Zabal during most of the year, but disappeared during the breeding-season. One which wintered near my quarters in 1916-17 got extremely tame, but departed in March.

Through the kindness of Lieut. D. W. Musselwhite I was able to get a good insight into the breeding habits of this bird whilst staying with him at Kantara during the latter part of April 1919, and secured several sets of eggs.

As this officer is publishing his own notes on this species I will confine myself to quoting his earliest and latest dates for eggs, viz., 2 March-12 June.

[*L. e. elegans* is a fairly common breeding species in low thorn bushes between Mahsama-Abu-Sueir. My dates are as follows:—On 6.iii.10, 4 fresh eggs, 1 fledged young; also 6 new nests and 3 building. On 27.iii.10 5 fresh eggs and an incomplete clutch of 3. In the Fayûm a nest with eggs much incubated was found early in February. It is evident all birds nest earlier in the Fayûm than in the Delta.—R. S.]

40. *Lanius senator niloticus*. Woodchat Shrike.

Observed regularly but sparingly in spring and autumn, passing through from 29 March to 7 May, and from 15 August to the end of September. All those obtained were referable to this form, and none to *L. s. senator*.

41. *Lanius nubicus*. Nubian Shrike.

Not uncommon during both migrations. Specimens shot on 13 September and 16 April, which dates are about the usual times of their passing.

42. *Lanius collurio*. Red-backed Shrike.

From 10 August to 20 September numbers pass through Abu Zabal, being more numerous some years than others. Rarely observed in spring.

43. *Pycnonotus barbatus arsinœ*. White-vented Bulbul.

I saw newly-fledged young birds being fed by the parents in the gardens at the Barrage on 14 August, 1918, and had two old nests pointed out to me by Mr. Marr. One was in a creeper on the side of his house. I believe it breeds at Palais de Koabeh.

[This Bulbul was common at Abbassia and at other places in the Fayûm in 1909, and undoubtedly breeds there, probably from March to May.—R. S.]

[Eggs of this species are extremely rare in collections from Egypt, but I have one clutch of five eggs taken by Major P. E. Vaughan near Cairo.—F. C. R. J.]

44. *Muscicapa striata striata*. Spotted Flycatcher.

A regular bird on passage, being very numerous during some springs from the second week in April until as late as 23 May. In the autumn this species occurs between the middle of September and 19 October.

45. *Muscicapa hypoleuca hypoleuca*. Pied Flycatcher.

Less numerous than the preceding species, but observed in both spring and autumn.

46. *Muscicapa albicollaris*. White-collared Flycatcher.

Rarely seen for certain. Several observed and one shot on 6 May, 1918.

47. *Phylloscopus collybita collybita*. Chiffchaff.

Very numerous throughout the winter months, arriving in October and departing in March.

48. *Phylloscopus collybita albietinus*. Eastern Chiffchaff.

Amongst the Chiffchaffs there was a sprinkling of birds with quite a different call-note. I have compared specimens

at the British Museum, and refer them to the above subspecies.

49. *Phylloscopus trochilus*. Willow-Warbler.
Numerous in spring, but less so in the autumn.

50. *Phylloscopus bonelli*. Bonelli's Warbler.
Seen occasionally feeding in the sount-trees in both spring and autumn. Specimens obtained.

51. *Phylloscopus sibilatrix sibilatrix*. Wood-Warbler.
Observed only in the spring except a single specimen seen on 11 September, 1917. Abu Zabal was not an ideal spot for observing the autumn migration, as I am certain many species rested near the coast and passed over Abu Zabal in the next lap of their journey.

[*Phylloscopus s. erlangeri*? Erlanger's Wood-Warbler.
On 17 April, 1916, I saw a bird which I believe was referable to this subspecies. It was in my garden, but I did not shoot it as I had hopes of trapping it alive.]

52. *Locustella luscinioides luscinioides*. Savi's Warbler.
Large numbers were observed roosting in the reed beds of the old canal in April 1917.

53. *Acrocephalus arundinaceus*. European Great Reed-Warbler.
I believe this species may occur at Abu Zabal, although I never secured one there. I did, however, shoot a specimen at Inchas, not far distant, in the spring of 1918.

54. *Acrocephalus stentoreus stentoreus*. Clamorous Reed-Warbler.
Common and resident in the reed-beds on the Birket Accrashi. I found the eggs of this bird on 11 May, 1916. Some were 75 per cent. incubated, others fresh, and I found several uncompleted nests on the same day. Fresh eggs and young birds were also observed in the Wadi Natrûn late in May 1918.

[Four eggs in the Fayûm and three at Inchas appear to be the normal clutch; I never found five. At Lake Qarûn in the Fayûm I took two fresh clutches of four on 30.iii.10.

At Inchas the beginning of June is the best time for fresh clutches, though I took fresh eggs between 28.iv.09 and 27.vi.09, but clutches of three taken on 15.v.09 and 6.vi.09 were slightly and very much incubated.—R.S.]

55. *Acrocephalus scirpaceus scirpaceus*. Common Reed-Warbler.

On 10 March, 1916, I picked up a Reed-Warbler which had been injured by flying against our aerial wires. Also observed in the vicinity of the Birket Accrashî in April, and again in early September.

56. *Acrocephalus schœnobæus*. Sedge-Warbler.

Common during both migrations. Several were observed so late in the spring—May—that I thought they must be breeding, but I never found any trace of nesting, and they subsequently disappeared, to return sometimes as early as 14 August.

57. *Hypolais pallida pallida*. Olivaceous Warbler.

Very common from the end of March until the end of August. Numbers breed at Abu Zabal, commencing to build soon after their arrival. As building-sites they usually select lime, orange or tangerine trees, but I found several in geranium bushes with the nest neatly built into a fork about two feet from the ground. Two broods are reared in a season, the second about the end of June; but I have occasionally found young birds still in the nest as late as the second week in August. Two to three is the usual clutch, and I only once found one of four. I have two sets of very pink eggs taken at Abu Zabal on 9.vi.16 and 13.v.16.

[The normal clutch consists of three eggs: only one set of four observed. 10 May is the usual date for fresh eggs.—R.S.]

58. *Hypolais rama*. Sykes's Warbler.

I shot a specimen at Inchas on 30 September, 1917, which Mr. M. J. Nicoll refers to this species. It is in the Giza collection. Although closely resembling the preceding species, I thought its note differed; and, moreover, it was late for *H. p. pallida* to be seen.

59. *Sylvia atricapilla*. Blackcap Warbler.

Seen sparingly in early spring. A specimen shot on 10 March. Never observed in autumn.

60. *Sylvia communis communis*. Common Whitethroat.

Common during the spring migration being most numerous in mid-April. Observed but rarely in September.

61. *Sylvia curruca curruca*. Lesser Whitethroat.

Abundant in the spring. Usually first observed about 16 February. Not uncommon in September.

62. *Sylvia rueppelli*. Rueppell's Warbler.

Common at Abu Zabal from 8 March to mid-April. Rarely observed in autumn.

63. *Sylvia melanocephala melanocephala*. Sardinian Warbler.

Several obtained. One caught alive on 23 March, 1916. Also shot on 25 February, 1917, and in September.

64. *Sylvia melanocephala momus*. Bowman's Warbler.

The only specimen I met with was one which I shot at Abu Zabal on 30 October, 1918.

65. *Sylvia melanocephala norrisæ*. Nicoll's Warbler.

I secured a single addled egg from a nest containing three young of this species on 21 March, 1917. The nest was built in a tamarisk bush on the small island in Lake Qarûn, Fayûm, and was about two and a half feet from the ground. The nest was well built, and something like that of the Greenfinch, but smaller, and a quantity of old fish-netting was used in the outside structure. The young were just about to fly when the nest was discovered by

Captain W. Shipton, who observed the birds haunting the bush whilst he was laid up waiting for ducks to flight. The female of this subspecies is of a very skulking disposition and extremely difficult to obtain in the tamarisk thickets. I succeeded in shooting two females and several males, and also another young bird just on the wing.

Apart from this locality, I also met with these birds near the Moeris Hotel, on the opposite shore of Lake Qarûn; and, on a subsequent visit, found it common at the eastern end of the lake, where I secured further specimens. I believe it to be fairly numerous in suitable places around the lake; but I never met with it at Tamiya or elsewhere in the Fayûm Province. The egg is very similar to some types of the Common Whitethroat, being greenish and closely spotted.

[I can confirm Mr. Raw's notes on this species, as I obtained a young bird unable to fly, and found several old nests of the year on an island in Lake Qarûn on 29. iii. 10. I also found a new nest without eggs. The nests I saw were chiefly composed of the stems of tamarisk bushes. —R. S.]

66. *Sylvia cantillans albigularis*. Subalpine Warbler.

Observed sparingly in early spring from 15 March to 12 April. Never identified in the autumn.

67. *Agrobates galactotes galactotes*. Rufous Warbler.

This, our only real song-bird, arrives towards the end of March, and is abundant and tame until the end of August. Two broods are raised annually, and dwarf date-palms are frequently selected to build in, although heaps of rubbish and clumps of prickly pears are also much resorted to. The middle of May is usually the time for the first full clutches, and I have found fresh eggs on 18 June. Two to three is normally all that one finds in a clutch, but some years sets of four are more common. Major F. W. Borman found clutches of five not uncommon farther north, near Lake Borollos, in June 1918. It also breeds in the Wadi Natrûn

in May. I once found fresh eggs of this species in a House-Sparrow's nest, eight feet from the ground, in an orange-tree. Nothing had apparently been added to the sparrow's nest by the Rufous Warblers. I had previously taken the eggs of both pairs of birds.

[In 1909-10 I found four eggs the normal clutch for first layings, and May 10 the best date for fresh eggs. In the Fayûm a nest had four fresh eggs on 5 May, 1910.—R. S.]

68. *Scotocerca inquieta inquieta*. Scrub-Warbler.

Although not occurring at Abu Zabal, where the desert is too void of rocks and bushes to suit its requirements, I found this species breeding in the Wadi Hof, about twenty miles south of Cairo, and it also occurs in the wadis behind the citadel. Mr. M. J. Nicoll has found eggs in the Wadi Hof as early as the first of March, and Major J. W. Borman found them there, I think, equally early. I, however, found one full clutch of five fresh eggs, one of four, and a single egg in the same place on 24 March, 1918. Several nests were then seen, yet unfinished.

This bird is very tame whilst breeding, and the male has a pleasing song. The nest, which resembles that of a Long-tailed Tit minus the lichen trimmings, is lined with feathers, pieces of string, or soft rag, and is to be found in the largest of the bushes which find an existence in the bottom of the wadi. The nest is usually about two feet from the ground, and not well concealed,

[In the Wadi Hof I found two nests with one and two fresh eggs respectively on 13 March, 1910, and another with four hard-set eggs on 6 April, 1910. One nest was lined entirely with Woodcocks' feathers, probably collected from a dead migrant.—R. S.]

69. *Prinia gracilis gracilis*. Fayûm Graceful Warbler.

This species does not occur at Abu Zabal, but I secured its eggs in the Fayûm, where it is abundant, on 14 March, 1917. The nest, eggs, and habits differ in no way from the two following subspecies.

70. *Prinia gracilis deltæ*. Delta Graceful Warbler.

This bird is common and resident at Abu Zabal, where I found its eggs, usually about the beginning of March; but they continue to breed throughout the spring, and I have seen young birds in the nest as late as 14 August. Tamarisk bushes, small palms, santon bushes, and creepers like honey-suckle are the usual building-sites for the nest, which is generally built of grasses and lined and decorated with pieces of raw cotton.

[The nest of this bird is entered by a hole in the side, near the top. The usual clutch consists of 3 or 4 eggs, and I never met with 5. April and May appear to be the principal breeding months.—R. S.]

71. *Prinia gracilis natronensis*. Natrion Graceful Warbler.

I secured the eggs of this subspecies in the Wadi Natrion late in May, 1918. Beyond one very deep red clutch of eggs I saw no difference in the nest, eggs, or habits from the preceding race.

72. *Cisticola cisticola cisticola*. Fantail Warbler.

Common and resident. I found the eggs of this species as early as 19 February and as late as early June, but April is the month when they are most numerous. My collection contains a wonderful variety of types, ranging from pure white through red-spotted on a white ground to Linnet- and even Thrush-like types, whilst the only five clutch I found consisted of eggs similar to those of the Spotted Flycatcher in colour. Two to four appears to be the normal number of eggs in a clutch. The nest is beautifully built and resembles the type of purse which is provided with a string to draw tight the mouth. It is usually built in the rank grass which borders the fields and canals, and is generally fairly near the ground. Occasionally a clump of rushes or other herbage surrounded by water is selected. Many nests are destroyed by the natives, who burn the grass to destroy locusts, etc. Another peculiarity of this species is its habit of building more than one nest, for no apparent reason, in

close proximity to one another. Should the first clutch be taken, it immediately utilizes one of these nests for the second laying. It never moves far, which I easily proved by observing the particular type laid by certain pairs.

I found one nest built in a stray clump of barley in a bean-field. The stems of the barley were neatly woven into the side of the nest. I gave this specimen to the Giza Museum.

[I have a five clutch of Blue Tit type taken at Inchas 30.iii.10. My earliest date for a clutch of three at Matarieh is 25.iii.09, and my latest 18.vi.1909. The majority of nests found at Inchas between the end of May and middle of June contained three eggs, but most likely there were several broods.—R. S.]

73. *Turdus pilaris*. Fieldfare.

Two seen at close range on 17 February, 1916 *, were all I ever saw at Abu Zabal.

74. *Turdus philomelus philomelus*. Song-Thrush.

Observed every winter. usually singly, in the gardens or palm groves. Never seen later than mid-March.

75. *Turdus merula syriacus*. Blackbird.

Observed every winter in the gardens, corn-fields, and palm-groves. Five seen together on 10 February, 1916.

76. *Monticola saxatilis*. Rock-Thrush.

Fairly common during the first fortnight of April each year. I appear to have no record during autumn.

77. *Monticola solitarius transcaspicus*. Blue Rock-Thrush.

Passes through Abu Zabal between 10 March and 15 April, being generally seen perched on mud-walls, native houses, and old wells.

[* In Captain A. W. Boyd's paper in 'The Ibis,' 1917, p. 541, it is stated that *Turdus viscivorus* had not been previously recorded from Egypt. This is a mistake, as Schrader described it as an occasional visitor in hard winters as far back as 1892.—F. C. R. J.]

78. *Ænanthe ænanthe* subsp.? Common Wheatear.

Numerous both in spring and autumn. This species passes through from late March until late in May, and during the month of September.

I have not yet examined my skins of this bird, so cannot say to which form they belong. I have frequently seen many birds sitting in the sount-trees, in the shade of a branch, gaping with the heat, at which time they are easy to approach, and are readily caught in a net-trap baited with a mealworm.

79. *Ænanthe deserti deserti*. Desert Wheatear.

Seen occasionally throughout the year. A brood of young birds usually appeared during August, but I never discovered the nest. Frequently observed perching on trees. Adult males are commoner during the latter part of April. An immature bird shot on 8 August, 1917, had a large green tick adhering to its eyelid.

80. *Ænanthe deserti albifrons*. Eastern Desert Wheatear.

In, I think, March 1917, I shot an adult male, which Mr. M. J. Nicoll referred to *Æ. d. atrogularis* (= *albifrons*). I later (8-15 March, 1919) shot other birds which appeared to belong to this form when compared with *Æ. d. deserti*; but one of them, which Dr. Hartert kindly examined, is believed by him to be referable to the latter form. As I have no more of my skins by me I must leave the question in this unsatisfactory condition.

81. *Ænanthe hispanica xanthomelæna*. Eastern Black-throated Wheatear.

Both Black-throated and Black-eared forms of this species pass through the Abu Zabal on both migrations somewhat later than the Common Wheatear, the male being earlier than the female in each case.

82. *Ænanthe leucomela cypriaca*. Eastern Pied Wheatear.

On 5 November, 1919, I shot the first authenticated specimen of this species in Egypt. The skin is in the Giza

Museum. It was an adult male, and I tried in vain to secure another male which haunted the rocky bed of an old canal for several days about the same time. This species must have been overlooked, for on 1 November, 1918, I shot another adult male, and during the succeeding week I saw upwards of a dozen and shot several, which are in my collection and that of Mr. J. L. Bonhote. All the specimens shot and seen were males, and, although I kept a good lookout, I never saw a single female.

83. *Ænanthe melanoleuca finschii*. Arabian Chat.

A female shot on 12 February, 1917, and three males during November, 1918, were all I met with at Abu Zabal.

84. *Ænanthe isabellina*. Isabelline Wheatear.

Winters at Abu Zabal, arriving towards the end of August and departing in April. None remain to breed. Very quarrelsome; a wounded bird is invariably set upon and killed by others of the same species.

85. *Ænanthe lugens lugens*. Mourning Chat.

Occasionally seen during the winter, and a brood of young, together with their parents, annually appeared on a piece of waste ground during August. Lack of suitable rocky retreats probably accounts for their scarcity at Abu Zabal.

Captain W. Bigger found young birds out of the nest on 28 April, and a pair building on 2 June, 1917, in a wadi behind the Citadel, Cairo.

I had intended to devote some time to this family in the spring of 1919, but the riots unfortunately upset my arrangements.

[Although I never found a nest with young or eggs, I saw and shot birds which were evidently breeding in the Wadi Hof near Helwan on 5.v.09, and found old nests in holes in the rocky sides of small valleys, presumably of this species.—R. S.]

86. *Ænanthe leucopyga*. White-rumped Chat.

This bird undoubtedly breeds in the Wadi Hof, Wadi Resheid, Wadi el Dejla, and other suitable places. Messrs. Bahr, Bigger, and Borman found a nest containing young five days old on 22 April, 1919. This was built under a rock in the Moqattam Hills near Cairo, and contained four young birds.

[Old nests, presumed to be of this species, were also found in the Wadi Hof in May 1909, and on 6 April 1910. I shot a female with small ovary: the bird was very fat. Mr. Nicoll has also obtained young birds in the Wadi Hof, which were undoubtedly bred there. A series of eggs of the Egyptian Pied Chats is badly needed. It appears probable that first nests will be found in early March.—R. S.]

87. *Ænanthe monacha*. Hooded Chat.

[This Chat was common at Luxor in December 1909, and a pair with three fledged young were observed in the Wadi Hof on 2. vi. 10.—R. S.]

88. *Saxicola rubetra rubetra*. Whinchat.

Seen sparingly in spring—late March to early May. Never observed in the autumn.

89. *Saxicola rubetra margaretæ*. Eastern Whinchat.

On 3 May, 1917, I shot a bird which Mr. M. J. Nicoll refers to this race. It is now in the Giza collection.

90. *Saxicola torquata rubicola*. Stonechat.

Stonechats appear about the second week in September and remain until the middle of March. None breed.

91. *Phœnicurus phœnicurus phœnicurus*. Common Redstart.

Observed in both spring and autumn; average dates 3 April and 8 September. Does not winter at Abu Zabal.

92. *Phœnicurus ochrurus gibraltariensis*. Black Redstart.

A pair or so winter at Abu Zabal, arriving in October. Latest record 15 March.

93. *Luscinia megarhyncha megarhyncha*. Nightingale.

Seen commonly in the crops when quail-shooting in April; also sparingly in the autumn. One heard singing 6 April, 1917.

94. *Luscinia suecica suecica*. Red-spotted Bluethroat.

Numbers winter at Abu Zabal. Frequently seen in the damper places when snipe-shooting, etc.; also frequents the herbage on the canal sides and the cotton-fields. Sometimes remains until May.

95. *Luscinia suecica volgæ*. White-spotted Bluethroat.

Less numerous than the above form, but obtained annually at the Birket Accrashi, where it may be found during the winter.

96. *Erithacus rubecula rubecula*. Robin.

A pair or so wintered every year in our garden. Very shy and retiring. Never observed later than 19 March.

97. *Hirundo rustica rustica*. European Swallow.

Numerous in spring and autumn. Observed as late as the end of May.

98. *Hirundo rustica savignii*. Egyptian Swallow.

Common and resident. Usually builds in native houses, under verandahs and railway bridges, and has been found by Major F. W. Borman in dug-outs on the Suez Canal. In the last week in April I saw a nest under a wharf on the Suez Canal within a few feet of the water. I have also seen nests in some of the busiest streets in Cairo, such as Mohamed Ali Street, just clear of the heads of pedestrians. The eggs are usually laid about the beginning of May, though sometimes earlier. There is considerable variation in the size of the eggs, some specimens being very small, and others as large as normal eggs of the European Swallow.

[My dates are—four eggs incubated 31. iii. 09; nests with eggs 21. iii. 94, 15. iv. 94; eggs and also young 8. vi. 1893—so it is evidently double- or treble-brooded. Four is the usual clutch.—R. S.]

99. *Hirundo daurica rufula*. Red-rumped Swallow.

Rarely observed at Abu Zabal, but on 1 May, 1917, a fair number of these birds were seen hawking for flies over the reed-beds at the Birket Accrashi.

100. *Delichon urbica urbica*? House-Martin.

Never very numerous, but observed at various times in spring and autumn. Six seen on 18 April, 1916.

101. *Riparia riparia riparia*. Sand-Martin.

This species passes through Abu Zabal in fair numbers, but is not readily distinguished from the following subspecies, and, in consequence, I am not certain of dates.

102. *Riparia riparia littoralis*. Shelley's Sand-Martin.

Abundant from the end of March throughout the summer, breeding in colonies in the sand-banks. One large colony had their nesting-holes in a sand-bank not more than eighteen inches high in a sand-pit near the Birket Accrashi. I took eggs there on 10 April, 1916, and had difficulty in finding a clutch of five. On 8 April, 1918, I found many nests containing five eggs. Major F. W. Borman showed me a thriving colony in some trenches at the School of Instruction close to a busy camp at Zeitoun.

[Very large colonies at Shubra Island and in both banks of the Nile between Rod-el-Farag and the Barrage. It also nests at Abbassia and at Abu Roash. I took many eggs between 18-22 March in 1909-10.—R. S.]

103. *Riparia obsoleta obsoleta*. Pale Crag-Martin.

Although this species was never observed at Abu Zabal it is not uncommon near the Citadel in Cairo and in the cliffs behind. I found a nest there in an old lime-kiln on 2 April, 1918, on which the bird was sitting. Owing to the position of the nest I was unable to investigate it. This species also breeds inside the domes of some of the houses in the main streets of Heliopolis, and I have seen them feeding young there in April. Captain W. Bigger found fresh eggs at Luxor on 19 February, 1917.

[The only eggs taken of this species were found in a building at Abbassia on 30 March, 1894; the clutch consisted of three, and the eggs are spotted with chestnut brown instead of red, and are easily distinguishable from the eggs of *H. r. savignii*.—R. S.]

104. **Apus murinus murinus.** Pallid Swift.

On 12 February, 1917, several were observed flying over the Birket Accrashi, where they were noted until 27 February. Single birds observed at various times of the year. I never identified the European Swift, but probably it also occurs. *A. m. murinus* was common near Lake Karûn in March 1917, and I shot several there.

[This bird is common at Cairo, and nests in the holes of walls in the mosques of the Tombs of the Khalifs. I took one clutch of fresh eggs on 1.iv.10, and found young fledged on 27.iv.09.—R. S.]

105. **Caprimulgus europæus europæus.** European Nightjar.

The only specimen ever met with at Abu Zabal was shot on 18 April, 1919. I found *C. e. europæus* to be not uncommon near Lake Menzaleh in September 1916.

106. **Caprimulgus ægyptius ægyptius.** Egyptian Nightjar.

This species was occasionally seen and obtained at Abu Zabal. It is extremely abundant between 18 August and the end of September, when bunches of upwards of fifty annually appeared on some rough ground near my quarters. When walking over this place there seemed to be a Nightjar to every yard. Of four which I shot on 9 September, 1917, two were males and two females. They were deep in moult.

Major F. W. Borman and Lieut. D. W. Musselwhite found two pairs of eggs and shot a bird of this species on 29 May at Sidi Salem. The eggs were much incubated, and were laid under the shelter of a small bush close up to the roots, on some uncultivated ground.

[This species was common in the desert on 16.iii.09.—R. S.]

107. *Caprimulgus ægyptius saharæ*. Nightjar.

On 20 May, 1916, I shot a female which had well-defined incubation patches, at Abu Zabal. I never discovered eggs or young, but saw another adult on 25 May near the same place—the edge of the desert. In 1917 I again saw a pair of birds in the same locality on 30 May and 4 July. A systematic search, however, brought no luck. I shot other specimens, but appear to have mislaid the data, and the skins are in the collection of the Giza Museum or that of Mr. J. L. Bonhote.

[A pair shot on 25. v. 10 at Gattah had their reproductive organs very much developed, but I failed to obtain any eggs.—R. S.]

108. *Merops apiaster*. *European Bee-eater.

Large numbers pass through Abu Zabal during both migrations. Average dates 9 April and mid-September. These birds roost in the same clumps of trees every year.

109. *Merops persicus persicus*. Blue-cheeked Bee-eater.

Large straggling flocks annually pass over Abu Zabal, sometimes at a great height and somewhat earlier than the preceding species. It breeds at Inchas in fair numbers, and I have taken full clutches there on 12 May, which date is very consistent.

[This Bee-eater also breeds between Farash-hour and Damietta; also between Abu Hammad and Mahsama.

In 1904 Mr. Malcolm took fresh eggs between 2–25 May.

At Inchas on 12. v. 09 I dug out several nest-holes, but the birds had not laid. The last week in May is apparently the time for full clutches, which range from four to six.—R. S.]

110. *Merops orientalis cleopatra*. Green Bee-eater.

Five seen on 17 October in the garden at Abu Zabal is the only record I have for that place. It is, however, fairly numerous round Cairo in the winter, and breeds no farther south than Mazghouna, where I took fresh eggs on 27 April, 1918. It is interesting to note that I found an addled egg of the previous year in amongst a fresh clutch, thus showing that the same hole is sometimes used again as a nesting-site. Some of their holes were on quite flat open

ground, but the majority were amongst prickly pears in little sand-pits. Five appears to be the full clutch.

[Mr. H. Malcolm took a clutch of seven eggs at Damietta on 16 April, and fresh eggs at Minieh on 6. v. 04.

At Mazghouna I took clutches of 6, 5, 5, slightly incubated, on 4. v. 10, and found two fresh eggs and one nest in which the birds had not yet laid.—R. S.]

111. *Upupa epops epops*. European Hoopoe.

This subspecies occurs annually, but owing to its great resemblance to the next on the list its dates of arrival and departure are hard to judge.

I have obtained it several times during the winter months, and have observed it well out on the desert, obviously migrating in April.

112. *Upupa epops major* Brehm. Brehm's Hoopoe.

Common and resident. I took a clutch of six fresh eggs out of a hole 20 feet up in the wall of our engine-house on 3 March, 1917. Other dates are: C/4, 10 April, 1916; C/6, 3 May, 1917; and C/7, C/7 at Inchas, 12 May, 1918.

This bird uses many sites for depositing its eggs, and I never found any nesting material in their filthy holes.

I quote a few sites which came under my observation:—Hole inside native hut, hole in a tree, old nesting-hole of the Pied Kingfisher nearly flush with water in a deep canal, firebox of old obsolete oven which was leaning against a wall, drain-pipe carrying water off a roof, and high up under the eaves of our engine-house, where presumably the same pair raised three broods in 1918. Hoopoes were again breeding there when I left in April 1919.

[The hole in a wall or under the eaves of a native house seems to be the usual site of nest. My dates for eggs are: Luxor, six fresh and three hard-set, 18. iii. 10; Inchas, six fresh, three fresh, on 30. iii. 10. At Inchas on 29. v. 09 I found seven young fourteen days old and five young ten days old: also four fresh eggs on 27. vi. 09, and it is evidently double- or treble-brooded.—R. S.]

[To be continued.]

XIV.—*The Birds of Tasso and adjoining Islands of the Rokelle River, Sierra Leone.* By WILLOUGHBY P. LOWE, M.B.O.U. With Notes by DAVID A. BANNERMAN, B.A., M.B.O.U.

(Text-figure 3.)

Preface.—By D. A. BANNERMAN.

THE collection of birds obtained by Mr. W. P. Lowe in Sierra Leone in the early spring of 1920 comprises 207 skins, representing 118 species and subspecies. As Mr. Lowe has explained in his introductory remarks, the collection was made principally on the three islands—Tasso, Mâyahgba, and Yatward—which lie in the wide mouth of the Rokelle River; these islands have never been explored, and it has therefore been thought advisable to give a complete list of the birds known to inhabit each. The position of these islands will be seen by referring to the map (text-figure 3) which has been specially prepared by Lieut. Mansergh, R.N., of H.M.S. 'Dwarf.' During his comparatively short stay in Sierra Leone, Mr. Lowe was successful in adding a number of species to the list of Sierra Leone birds hitherto unrecorded from the Colony. All were obtained, unless the contrary is noted, viz.:—*Ortygospiza atricollis ansorgei*, *Antichromus minutus minutus*, † *Cisticola terrestris* subsp. undetermined, *Cisticola rufopileata rufopileata*, *Pentholæa frontalis*, *Bradyornis murinus modestus*, *Batis senegalensis togoensis*, *Tchitrea viridis viridis*, *Riparia riparia riparia*, *Clamator glandarius*, *Centropus francisi*, *Micropus æquatorialis lowei*, subsp. nov., *Lophoceros nasutus nasutus*, *Bycanistes fistulator*, *Bubo africanus cinerascens*, * *Aquila wahlbergi*, * *Spizaëtus coronatus*, * *Cuncuma vocifer*, *Circæëtus cinereus*, * *Pandion haliaëtus*

* Not obtained, but identified without a doubt.

† A single specimen only was obtained; recently we have received a further single specimen in breeding-plumage from Major Scovil, R.A. The bird is most nearly allied to *C. t. eximia*, Heugl., and, when a series are obtained, will probably prove to belong to an undescribed race.

halidætus, **Pelecanus* sp. uncertain, **Ardea goliath*, *Melanophoyr ardesiaca*, *Ardeola ibis ibis*, *Tringa ferruginea ferruginea*, *Totanus totanus*, *Rhyacophilus glareola*, **Squatarola squatarola*, *Larus fuscus fuscus*, *Sterna* sp. not yet determined, *Hydrochelidon nigra*, *Hydrochelidon hybrida*, *Numida meleagris*.

When it is remembered that Mr. Lowe spent under three months in the Colony, the fact that he could procure or identify without a doubt thirty-two birds, which, despite the labours of Mr. Robin Kemp, Major Kelsall, and others, had never previously been recorded from Sierra Leone, speaks volumes for the work still to be done in West Africa, and not a little for the untiring energy and discrimination with which Mr. Lowe faced his task.

Special mention must here be made of the new Giant Swift, which Mr. Lowe discovered. A single specimen was shot at Mahera up the Rokelle River (see Map), and Mr. Lowe tells me that this Swift was very common in the neighbourhood of the village, and had he had more than one cartridge he could have secured a fine series. The birds were nesting at the time of his visit, 21 April. The discovery of this bird in Sierra Leone is of very special interest, as hitherto no specimen of any race of the Giant Swift has been obtained in this part of Africa. The typical species inhabits Abyssinia and probably extends south through the great lakes. More than one race has been described, and, almost at the same time as Mr. Lowe shot his bird, Capt. Hubert Lynes, R.N., procured yet another race in Darfur in almost the same latitude as Sierra Leone. I have already described *M. æ. lowei* at length in the 'Bulletin' of the Brit. Orn. Club, vol. xli., October 1920, p. 2. Additional specimens are badly needed in the British Museum. The bird cannot be mistaken for any other Swift, as the wing measures 204 mm.

Another bird of very great interest, which does not strictly come within the scope of this paper, may, nevertheless, well be mentioned here. It is a small Rail which flew on board

* Not obtained, but identified without a doubt.

H.M.S. 'Dwarf,' in lat. $10^{\circ} 0' N.$, long. $15^{\circ} 30' W.$, on June 14th, 1920, while the gunboat was at sea off Portuguese Guinea. Mr. Lowe skinned the little bird, and it proved to be a new race, which I named *Sarothrura bohmi danei* in honour of Lieut.-Commander Dane, R.N., of H.M.S. 'Dwarf' (*cf.* Bull. B. O. C. vol. xli., Oct. 1920, p. 3).

Another bird, the identification of which has been anything but easy, figures in my list as *Sterna* [species undetermined] ?*dougalli*, Mont. The Roseate Tern. This is a most remarkable specimen, which has puzzled several ornithologists to whom I have submitted it. Dr. Hartert has, I believe, come nearest to identifying the bird; he writes "I should describe it as a gigantic specimen of *Sterna dougalli* with abnormally deep cleft feet." He notes that *Sterna dougalli gracilis* of Australia sometimes has wings as long as this. Unfortunately, the Tern under discussion, which Mr. Lowe shot in Freetown Harbour on the 5th May, 1920, is an immature female, apparently about eleven months old, with bill and feet black. The primaries are very worn, and the shafts broken off at the end; and taking this fact into consideration the wing-measurement of 233 mm. is remarkable. Had the wings not been damaged, the measurement would have been somewhere between 235–240 mm. The bird is in full moult, and has attained its new tail-feathers and some of the secondaries. If it is indeed a specimen of the Roseate Tern, its occurrence so late as May in Sierra Leone is difficult to explain. The bird is recorded from one or two localities on the East African coast as far as Cape Town, but I know of no example having been taken in West Africa. Mr. Willoughby Lowe believes that it will prove to be a resident and probably distinct breeding-race, but until its breeding-ground is discovered nothing further can be done. I would specially draw the attention of any ornithologist who may be quartered at Freetown to securing more specimens, and particularly of ascertaining whether any Roseate Terns visit Freetown Harbour.

Mr. Lowe has reported the existence on Tasso Island of a fine Ground-Hornbill (*Bucorvus*), which from his description

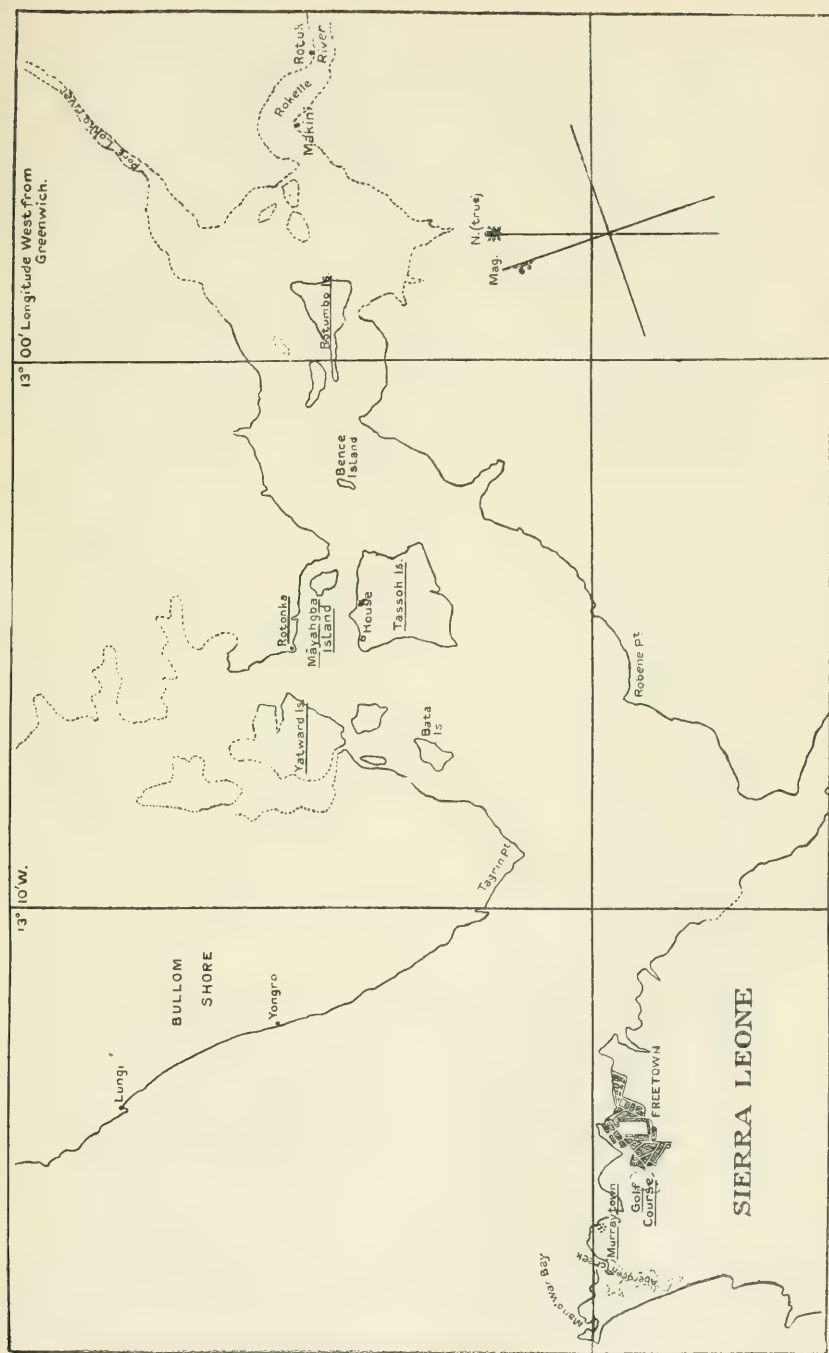
appears to be an undescribed species. It is an enormous bird, a pair of which were seen by Mr. Lowe on more than one occasion, and is remarkable for the fact that it is *entirely* black, lacking the white primaries of *B. abyssinicus* and *B. cafer*. As no example of *Bucorvus* with black primaries is known to exist anywhere in Africa, a specimen should be secured at the earliest opportunity.

I wish to take this opportunity of expressing the great appreciation felt by the authorities of the Natural History Museum to Commander Dane, R.N., for so generously taking Mr. Willoughby Lowe with him as naturalist on his ship. Much of the material obtained by Mr. Lowe (including a large collection of birds from Lagos, Southern Nigeria) still remains to be worked out, but it will be apparent from a perusal of this paper how much valuable work Mr. Lowe has accomplished, thanks very largely to the facilities afforded by Commander Dane, who spared no pains or personal expense to make the trip a success. The new Rail and a fine Antelope have been named after him as a small recognition of his kindness.

Introduction.—By WILLOUGHBY P. LOWE, M.B.O.U.

Having been kindly invited by Lieut.-Commander A. Y. Dane, R.N., of H.M.S. 'Dwarf,' to accompany him in his gunboat to the West Coast of Africa, I found myself once again off Freetown, Sierra Leone, on 25 February, 1920. My first object was to try and complete the collection made on my last visit of 1911 whilst the guest of Capt. Hardy, R.N., of H.M.S. 'Mutine.' It was now arranged that I should stay on the high ground at Hill Station, and from this point many new additions to my former collection were made, as well as new records to the list of known Sierra Leone birds. Having about exhausted the birds found in the immediate neighbourhood of Freetown, it was with much interest and pleasure that Commander Dane and myself left the ship early on March 12 for the zoologically unexplored Rokelle River and its numerous islands. We arrived at Tasso Island (text-fig. 3) about 11 A.M. An empty bungalow was to be had, and

Text-figure 3.



here I settled down to work—chiefly on Tasso Island,—but paying a few short visits to Yatward, Mâyahgba, Rotoombo, and other islands, as well as a day's sail up the Rokelle River to Mabile, where the river becomes more narrow and difficult of passage on account of the large rocks in the river-bed. It was here that I saw on 16 April a Kori Bustard, which almost without doubt was *Otis kori struthiunculus*. So far as I know, no Kori Bustard has been recorded from the West Coast, and it is therefore possible that, had I obtained a specimen, it would have proved to belong to an undescribed race—possibly a dark form of the North-African Kori Bustard. I also came across a small dry pond where the bird dusted itself, and was able to examine many feathers from the wings.

On my return I stayed at Mahera, and it was here I discovered the new Giant Swift (*Micropus aquatorialis lowei*), which Mr. Bannerman has described, in abundance.

I shall now confine myself chiefly to Tasso Island. It may be of interest to say that the word Tasso means “a resting-place,” where all the native boats stop on their journeys up and down the river waiting for wind and tide. Mâyahgba means “shaky island”—possibly on account of the wind; Yatward was named after a chief of the island; whilst the large long island of Rotoomba, which swarms with game and is nearly all covered with thick bush, means “goat island,” on account of the so-called “Bush-Goats” (*Cephalopus niger*), which seem to occur here and not on any of the other islands.

The rather important village of Tasso is at the north-west corner of the island, and is one of the few spots not surrounded by a dense belt of mangroves. It was, no doubt, like Bense Island, a stronghold of the Dutch and Portuguese slavers—as the still remaining old cannons half buried in sand prove. The island is roughly about three by four miles in extent and distant a mile from the mainland. It is probably about 60 ft. high and, like the mainland, of volcanic origin. It has a light sandy soil, and is for the most part covered with low scrubby bush, which is burnt

periodically for farming purposes. The trees of any size are scanty : a few very fine cotton-woods are found around the village, the remainder seem to have been all used for making dug-out canoes. There are, however, some oil-palm trees at the southern end of the island, the favourite resort of bats and parrots.

Tasso may be said to differ in one respect from the other islands by having two very large ponds, one of which was dry when I arrived and the other nearly so. These seem to be the only natural supply of fresh water, and during the autumn they are frequented by large quantities of water-fowl. It is therefore more than probable that Tasso will be found to have a far greater variety of birds than any of the other islands. The chief interest to the ornithologist respecting these islands lies in the fact that so many birds found on the high mainland are conspicuous by their absence. Take, for instance, only two very noticeable ones—the Plantain-eater (*Turacus macrorhynchus*), whose noisy habits and brilliant plumage is at once missed, or again the lovely little Blue Flycatcher (*Platysteira cyanea*), so well known and loved by all white people who visit the Colony.

I am here giving a complete list of the birds obtained on this and other islands, as well as those seen and whose identification is beyond doubt.

I am greatly indebted to Mr. David A. Bannerman for having named the collection, and for compiling a complete list of Sierra Leone birds, which will not only be useful to compare with the island lists here given, but will also be of great service to those who will continue the interesting study of Sierra Leone birds. I have also to thank Lieut. M. J. Mansergh, R.N., of H.M.S. 'Dwarf,' for preparing this the first correct map of the little-known Rokelle River and its islands. There are still, doubtless, many birds in Sierra Leone which have not yet been recorded, but Mr. Bannerman's list will at least bring our knowledge of Sierra Leone birds up to date.

An asterisk denotes that the bird was seen beyond doubt, but no skins were preserved.

*List of the Birds of Tasso Island, Rokelle River,
Sierra Leone, with Field-notes.*

Corvus scapulatus. Pied Crow.

On Tasso Island during March these birds were very scarce, only an odd bird was to be seen. During April their numbers greatly increased, and small flocks of twenty were to be seen.

Cinnyricinclus leucogaster leucogaster. Amethyst Starling.

Fairly common on Tasso Island. A pair were nesting in a hollow stump of a dead sapling, two feet high, on 10 April. A single well-fledged bird was found in the hole, one foot deep. There was no sign of any nest.

Hyphantornis cucullatus. Rufous-necked Weaver.

Quite common and nesting in a cottonwood tree on 18 March.

Sitagra ocularius brachypterus. Swainson's Spectacled Weaver.

Not nearly so plentiful as the former species.

Budytes flava flava. Yellow Wagtail.

Several seen on the pond near the village, which was nearly dried up.

Anthus leucophrys gouldi. Gould's Pipit.

A common bird amongst the cassava, where it nests.

Cyanomitra verticalis verticalis. Green-headed Olive Sunbird.

Tolerably common, but much more plentiful on the mainland.

Cinnyris chloropygius chloropygius. Scarlet-collared Sunbird.

This beautiful little Sunbird is, no doubt, the commonest species.

Anthothreptes gabonica. Little Brown-and-white Sunbird.

Moderately common about Tasso village, in company with the former species.

Cisticola lateralis. Grass-Warbler.

A fairly common species, possessing a beautiful song, which is uttered in the early morning from the top of some small bush. The same spot is used daily for this purpose.

Prinia mystacea melanorhyncha. Black-billed Wren-Warbler.

Noticed sparingly in March amongst low bush.

Hylia prasina. Cassin's Warbler.

One shot 9 April, but unfortunately not recovered. They are moderately common in thick bush.

Pycnonotus barbatus inornatus. Dusky Bulbul.

A pair of these birds used to sing behind our bungalow ; they were the only ones seen.

Phyllastrephus simplex. The Plain Bulbul.

Tolerably common. Breeding 17 March.

Campophaga phœnicea. Red-shouldered Cuckoo-Shrike.

I only met with two (both young birds).

***Hirundo rustica rustica.** Common Swallow.

Swallows were irregular during the latter part of March. Some days only two or three were seen, whilst another day they were numerous and in fairly large flocks.

Dendropicus lugubris. Mournful Woodpecker.

A well-fledged bird was brought to me on 14 April by a child whose father had cut down a small dead tree. I could not get the child to part with it.

Crinifer africana africana. African Plantain-eater.

Only noticed twice. The first time three were observed in some thick bush and two specimens were secured.

Clamator glandarius. Great Spotted Cuckoo.

Not common. The oviduct of one shot on 31 March contained an egg.

Centropus senegalensis senegalensis. Senegal Coucal.
One of the commonest birds, occurring everywhere.

Ceuthmochares aereus flavirostris. Yellow-billed Coucal.
A fairly common bird.

Tachornis parvus brachypterus. Short-winged Palm-Swift.
One of the most common birds.

Scotornis climacurus. Long-tailed Nightjar.

This is quite a common bird. On 16 March I found a bird sitting on some reddish-coloured ground amongst the cassava. I went close up to it and it refused to move until I practically touched it with my hand, when it flew away a short distance, leaving two eggs, which were brought home. Their colour matched the ground wonderfully well.

Lophoceros semifasciatus. Half-barred Hornbill.
Tolerably common.

Bycanistes fistulator. Piping Hornbill.
Moderately common and noticed feeding on berries.

***Bucorvus** sp. ? Ground-Hornbill.

A pair of Ground-Hornbills inhabited the island. Unfortunately, I was not able to obtain a specimen, though I and others saw them many times. In size they resemble *B. abyssinicus*, but differ from that bird in being entirely black throughout, including the head and neck. They are known to the natives as "Woodcock," and are said to occur on the mainland, but I failed to find any. The beat of the wing is audible at a considerable distance.

[It seems very probable that the Ground-Hornbill seen by Mr. Lowe on Tasso Island will prove to be an entirely new, undescribed species. A race (if recognised as such) of *B. abyssinicus* is certainly known to inhabit parts of West Africa, and is recorded by Reichenow from Portuguese Guinea. This form was named by Schlegel "*Buceros carunculatus*, var. *guineensis*," on account of its supposed smaller size etc., but Reichenow ('*Vögel Afrikas*,' ii. p. 234)

does not accept it. In any case, this West-African bird resembles the Abyssinian species in having *white* primaries, whereas the bird Mr. Lowe saw had entirely *black* primaries. Should any naturalist or sportsman have an opportunity of procuring one of these birds, the chance should not be neglected; and may I beg him to forward the skin to the Director, British Museum (Natural History), London, S.W., where it will be most gratefully received, tying on to its feet a label bearing the locality where obtained, date, and name of collector, and, if possible, the sex of the bird.—*D. A. B.*]

Merops persicus chrysocercus. West-African Persian Bee-eater.

On 13 March only a single bird was to be seen, whilst on 25 March they were tolerably common, flying about the large pond at back of Tasso village.

Aerops albicollis albicollis. White-necked Bee-eater.
Tolerably common on Tasso Island, 22 March.

***Eurystomus afer afer.** Cinnamon Roller.
Common. A very pugnacious bird, attacking anything that comes near its favourite haunt.

Halcyon malimbicus forbesi. Forbes's Kingfisher.
Tolerably common.

***Ceryle rudis rudis.** Pied Kingfisher.
Fairly common around the island.

Psittacus erithacus timneh. Timneh Grey Parrot.
Heard nearly every morning at daybreak flying over the village of Tasso. They were tolerably common at the southern end of the island, feeding on palm-nuts.

Bubo africanus cinerascens. Greyish-spotted Eagle-Owl.
I only saw two of these birds; they were in some very tall mangrove-trees. The one shot had been feeding on rodents. Two young birds were obtained at Freetown, and were sent to the Zoological Gardens, London, where they are doing well.

Otus leucotis leucotis. White-faced Scops Owl.

Some children found a nest on 29 March in the fork of a large mango-tree. It contained two young birds which were just able to fly, one of which was caught and subsequently went to the Zoological Gardens. The site chosen was ten feet from the ground, and there was no sign of any nest, the tiny young birds merely sitting among a few bones and pellets. The bird when caught had quite a brownish shade overlaid with sulphur-yellow. After a few weeks of captivity this disappeared. I visited this bird at the Gardens on 5 September, not having seen it for many months. I was pleased to find it remembered me, although very sleepy, and frequently responded to my call.

Buteo auguralis. Lesser Augur-Buzzard.

Found nesting in a cottonwood-tree about forty feet up. On 8 April I shot the female, which was alarmed for the safety of her young. On the following day I visited the nest and found the male had obtained another mate to assist in rearing the young. This seems very often to happen, and I have noticed it even amongst Orioles in America.

***Aquila wahlbergi.** Wahlberg's Eagle.

One seen several times near Tasso, perched and flying. Evidently uncommon, as it was the only one noticed.

[Mr. Lowe cannot have made any mistake in the identification of this species. We have a skin in the British Museum, obtained at Bissao, Portuguese Guinea (ex Verreaux Collection), so that there is little doubt Mr. Lowe correctly identified his bird.—*D. A. B.*]

***Cuncuma vocifer.** Vociferous Sea-Eagle.

Tolerably common up the Rokelle River. Several times seen perched or flying on or around Tasso Island.

[This seems to be the first record from Sierra Leone. We have specimens in the Museum from Senegal and Cameroon.—*D. A. B.*]

***Kaupifalco monogrammicus monogrammicus.** African Buzzard-Eagle.

Several seen. A fairly common bird.

***Gypohierax angolensis.** Vulturine Sea-Eagle.

A very common and conspicuous bird, and much liked by the natives for food.

***Pandion haliaëtus haliaëtus.** Osprey.

Seen several times at the southern end of the island, where the natives have fish-traps.

***Necrosyrtes monachus monachus.** Hooded Vulture.

Abundant in and around the village of Tasso. The difference between these Vultures and those of British East Africa struck me as curious. We often shot Antelope and left them in a tree or by the roadside, and they were never molested; whilst in British East Africa Vultures appear at once when game is killed, and, if not carefully guarded, soon commence to devour it.

[An immature female specimen of this Vulture, no. 562, now in the British Museum, obtained by Mr. Lowe at Murray town, Sierra Leone, on 27 April, 1920, is in very peculiar "head dress." I have never seen any Vulture in this state of plumage, and, as I can find no description of it in any paper, I describe it as follows:—Skin of the head immediately above the eye and below the eye absolutely bare of feathers, the bare skin divided on the top of the head by very short black feathers growing in tiny hair-like tufts, these black feathers dividing and passing over the base of the skull so as to completely encircle a pure white fluffy tuft measuring 38×10 mm. Both the eyes and the ears are surrounded with black hair-like feathers. The hind neck, from the base of the occiput to the commencement of the long feathers on the nape, is covered with close, almost fur-like, buff-coloured feathers. The lower part of the throat and the under sides of the neck are entirely bare of feathers, and only the skin from the base of the lower mandible for a distance of 55 mm. is covered with numerous small black hair-like tufts. At the extreme base of the neck on the under surface, and below the bare patch, there is a patch of rather long dark brown feathers, dividing the bare

patch of the lower neck from the short brown feathers of the breast.—*D. A. B.*]

***Pelecanus** sp. uncertain.

One or two Pelicans were noticed daily, either flying or fishing off the mud-flats. I was unfortunately unable to obtain a specimen, but they were probably *P. onocrotalus sharpei*.

[It does not yet seem to have been settled definitely whether the Pelican of West Africa (*terra typica*, Angola), named *P. sharpei* by Bocage, is a distinct subspecies or merely a colour-variety. Dr. Reichenow inclines to the latter view (*Vög. Afr.* i. p. 100). Apparently more specimens are badly required in the National Collection.—*D. A. B.*]

Scopus umbretta umbretta. Hammer-head Stork.

Several seen wading about on the pond in company with *Bubulcus ibis*. I saw none elsewhere.

Ardea cinerea. Common Heron.

I only saw the one obtained, but I have no doubt they are tolerably common.

Demigretta gularis gularis. White-throated Slaty Heron.

Early in March these birds are very plentiful, but towards April their numbers are greatly decreased. At Freetown they nearly all disappear to their breeding-ground, wherever that may be, and only an odd straggler is left behind.

Ardeola ibis ibis. Buff-backed Egret.

Very common on the pond. Sometimes as many as fifty seen together.

Rhyacophilus glareola. Wood-Sandpiper.

Common on the beach and also noted in mangrove-swamps.

Tringa ferruginea ferruginea. Curlew-Sandpiper.

Only noticed along the beach, where it is fairly common. It does not appear to have been recorded from Sierra Leone previously.

***Numenius arquatus arquatus.** Curlew.

Abounds along mud-flats.

Numenius phæopus phæopus. Whimbrel.

A very common bird, whose numbers become much reduced by the end of April. A few were seen on 23 May, whilst a single bird was seen near Freetown on 20 June.

Squatarola squatarola. Grey Plover.

A common species, retreating at high water to the mangrove-branches in company with other Waders.

Arenaria interpres interpres. Turnstone.

Common along the shores at low water. When the tide rises they, as well as other Waders, take refuge in the tall mangroves, where one may find lots of fifty or more all huddled together.

***Larus cirrhocephalus.** Grey-headed Gull.

The most common Gull. Very numerous at Freetown during the winter, but they nearly all depart for their breeding-grounds in the interior in April.

***Larus fuscus affinis.** British Lesser Black-backed Gull.

It is obviously the light-backed race of this Gull which occurs sparingly off Tasso Island. Common at Freetown as late as 11 May, at which date only two or three used, in company with a single *Larus cirrhocephalus*, to visit our ship daily. No actual specimen was obtained during this visit.

Larus fuscus fuscus. Continental Lesser Black-backed Gull.

A single specimen of the dark-backed race of this Gull was obtained on 11 May at Freetown.

[The specimen obtained on 11 May is undoubtedly an example of the dark-backed race, *Larus fuscus fuscus*. It is, of course, far out of the supposed range of this species, which is usually considered to be Scandinavia and eastwards (breeding). In winter it visits the eastern Mediterranean,

ranging to the head of the Persian Gulf. I have, however, known the dark race to occur once in the Canary Islands (*cf.* Ibis, 1920, p. 757), so that apparently stragglers may be looked for on the West Coast of Africa, where there can be no limit to its wanderings. Undoubtedly the note supplied by Mr. Lowe must apply to the British Lesser Black-backed Gull (*Larus fuscus affinis*), which is known to winter in the western Mediterranean, in the Azores, Madeira, and Canary Islands, passing down the West African coast as far as Southern Nigeria. Mr. Lowe has himself obtained a specimen of the light-backed race in Sierra Leone on a former trip; this was recorded by myself (Ibis, 1912, p. 229) as *L. fuscus*.—D. A. B.]

***Sterna maxima.** Giant Tern.

A flock of about fifty were seen daily off the shore.

Streptopelia semitorquata erythrophrys. Red-eyed Turtle-Dove.

Very common. Young birds, well-fledged, were obtained 9 April.

***Chalcopelia afra afra.** Blue-spotted Wood-Dove.
Moderately common.

Vinago calva calva. Bald-fronted Fruit-Pigeon.
Scarce. Two or three seen in the tall mangroves.

Fancolinus bicalcaratus thornei. Thorne's Double-spurred Francolin.

This is undoubtedly by far the most common bird on the island. In the cassava it fairly swarms, coveys of thirty or more rising continuously as one walks through. They do a great deal of damage to the crops, and the natives, having no guns, are completely at the mercy of the bird. My last visit to their feeding-grounds, 23 May, showed they had paired and receded into the bush, as only an odd bird was to be seen, where a few weeks previously there were hundreds.

*List of the Birds of Môyahgha Island.****Tschagra senegala senegala.**

A single bird seen on 28 March.

***Cisticola lateralis.**

Tolerably common, and in full song on 28 March.

Platysteira cyanea cyanea.

Breeding on the island on 27 March, when a specimen was procured.

***Lybius bidentatus bidentatus.**

A single pair seen on 28 March.

***Centropus senegalensis senegalensis.**

Common.

***Lophoceros semifasciatus.**

Scarce. Only one seen.

***Bycanistes fistulator.**

A fairly common species.

***Merops persicus chrysocercus.**

Only two seen 27 March.

***Eurystomus afer afer.**

Only two or three seen.

***Astur badius sphenurus.**

A single pair seen.

***Spizaëtus coronatus.**

One seen perched on the dead branch of a tall tree on 28 March. Unfortunately, I was in the midst of an antelope drive, and so unable to shoot it.

[This is apparently the first record of *S. coronatus* from Sierra Leone. Mr. Lowe is well acquainted with this West African species, and his identification may be relied upon. We have West African specimens in the British Museum

from the Gold Coast and Cameroon, while Reichenow records it, in addition, from Portuguese Guinea, Liberia, and Cape Coast besides many localities in South Africa.—*D. A. B.*]

Demigretta gularis gularis.

****Ardea goliath.***

A single bird seen on 28 March.

[Curiously enough, this is apparently the first record of *A. goliath* from Sierra Leone. It is known from many parts of West Africa, and has an enormous range throughout the whole of tropical Africa.—*D. A. B.*]

Numenius arquatus arquatus.

Numenius phæopus phæopus.

****Francolinus bicalcaratus thornei.***

Very common.

****Numida meleagris.***

Only four seen. They are found with *Francolinus bicalcaratus thornei* in an open space in the centre of the island.

List of the Birds of Yatward Island.

Hyphantornis cucullatus.

**Hirundo rustica rustica.*

**Tachornis parvus brachypterus.*

Halcyon malimbicus forbesi.

**Psittacus erithacus timneh.*

**Astur badius sphenurus.*

**Milvus migrans parasitus.*

**Gypohierax angolensis.*

**Demigretta gularis gularis.*

**Butorides atricapilla.*

**Rhyacophilus glarcola.*

**Arenaria interpres interpres.*

**Sterna maxima.*

XV.—*A Systematic List of the Birds of Sierra Leone.*

By DAVID BANNERMAN, M.B.E., B.A., M.B.O.U.

THERE appears to be very little literature dealing with Sierra Leone Ornithology, and only three papers which deal exclusively with Sierra Leone birds. The following is a short list of the papers I have consulted :—

- L. Fraser. 1839. Proc. Zool. Soc. p. 34. [On a new species of *Corythair.*]
 L. Fraser. 1842. Proc. Zool. Soc. p. 190.
 L. Fraser. 1843. Ann. & Mag. Nat. Hist. vol. xii. p. 367. }
 [Description of a new *Pitta* (*P. pulih*).]
 Sundevall. 1849. Öfversigt K. Sv. Vet.-Akad. Förhandlingar, pp. 156–163.
 [This list contained the description of a new Hornbill, *Buceros cultratus* (= *Ceratogymna elata*), and the names of 23 birds (17 of which appear to be genuine, while 6 are indeterminable), including *Caprimulgus macrodipterus* Afzel., which has been used by most authors for the Long-plumed Nightjar. The name cannot stand, for the reasons pointed out by Claude Grant (*cf.* Ibis, 1915, p. 302, footnote).]
 Cassin. 1851. Proc. Philad. Acad. p. 347. [Re-described *Chaunonotus sabini* under name *C. carbonarius*, and describes *Graucalus azureus*.]
 Jardine. 1852. Contrib. to Ornith. p. 57. [First record of *Halcyon striolata* (= *H. chelicuti*) from Sierra Leone.]
 Sundevall. 1852. Jardine's Contrib. to Ornith. pp. 161, 162. [Makes minor corrections to his description of *Buceros cultratus*.]
 Gray, G. R. 1867. List of specimens in Brit. Mus., pt. v. p. 44. [*Guttera cristata*, recorded from Sierra Leone.]
 Jardine, Sir W. 1874. Catalogue of skins in the Jardine Collection. [Contains names of 42 birds from Sierra Leone collected by Fergusson, a few by Forbes and P. Neil. The skins were sold by auction in London on 17 June, 1886, and a number were then secured for the British, Cambridge University, and Royal Scottish Museums.]

Kemp, Robin. 1905. 'Ibis,' pp. 213-247. [With notes by Dr. Bowdler Sharpe.]

Bannerman, David A. 1912. 'Ibis,' pp. 219-268. [An account of Mr. Willoughby Lowe's West African collections whilst naturalist on H.M.S. 'Mutine.']

Kelsall, H. J. 1914. 'Ibis,' pp. 192-228. [An account of his own collection.]

Lowe, Willoughby P. 1921. 'Ibis,' pp. 265-282. [An account of the birds collected on his second trip to Sierra Leone on H.M.S. 'Dwarf,' with notes by myself.]

For the interest of those who have not access to the past numbers of 'The Ibis,' I have prepared a short account of the work done by the three most important collectors, Mr. Robin Kemp, Col. H. J. Kelsall, and Mr. W. P. Lowe :—

Mr. Robin Kemp landed in Sierra Leone on the 7th of March, 1902, and remained there over three years. His collections, which were made in the Mendi country—the south-eastern part of the colony,—comprised 620 skins referable to 145 species. The majority of the birds were shot at Bo (450 ft.), but quite a number at Rotifunk, situated on the Bumpé River, much nearer Freetown and the coast. The Mendi country is described as being "entirely covered with bush or small forest broken here and there by rice-farms and swamps, and has six large rivers flowing in a southerly direction." Kemp's birds are now in the British Museum.

Mr. Willoughby P. Lowe was the next collector to visit Sierra Leone. He stayed there from the 28th of January to the 6th of February, 1911, and again from the 7th to the 12th of March of the same year, when naturalist on board H.M.S. 'Mutine,' at the invitation of Captain Hardy, R.N. During these two short visits Mr. Lowe secured 60 different species of birds. These and the rest of Mr. Lowe's collection, made during the voyage of the 'Mutine,' were worked out by myself, and the results published in 'The

Ibis,' 1912, pp. 219-268. I should like to take this opportunity of making some corrections in this paper, two of which have already been pointed out by Major Kelsall. The birds recorded as *Pyrenestes ostrinus* were in reality *P. coccineus* (pp. 224 & 232); likewise the immature birds recorded from Sierra Leone and Liberia as *Chalcomitra acik* are *C. splendidus*, while that from St. Paul de Loanda is *C. gutturalis* (p. 225).

Specimens of *Ardea gularis* were, owing to an unaccountable slip, recorded as *Melanophoyx ardesiaca* (p. 228). These two small Herons cannot possibly be confused. We did not in those days pay such minute attention to the geographical races of birds described, and in consequence several birds recorded as species have now been sunk to the level of subspecies, while others are now recognized as distinct races of the species then recorded. Mr. Lowe's collections were presented to the British Museum by Captain Hardy.

Colonel H. J. Kelsall, R.A. (then Major), was stationed in Sierra Leone from August 1910 to August 1911, and again from February 1912 to February 1913. His collection numbered 941 specimens, embracing 215 species.

Major Kelsall worked out this collection himself, and published a valuable paper, together with an excellent map of the Protectorate. Kelsall carried out most of his observations in the Peninsula, but also toured through the central and southern portions of the Protectorate, an itinerary of which journey will be found in his paper (*l.c.* p. 193). On another occasion he spent a short time in the Ribbi and Bumpé Chiefdoms. His geographical and topographical notes are much fuller than those given by Kemp, and add largely to the value and interest of his paper.

Kelsall's collections were divided between the British, Tring, and Dublin Museums, only 42 specimens belonging to 29 species and subspecies coming to the first named.

Mr. Willoughby Lowe's second collection was made in the spring of last year (1920), mainly on the islands of the Rokelle River, when the guest of Commander Dane, R.N., as naturalist on board H.M.S. 'Dwarf.'

This collection, which I had the opportunity of working out, comprised 207 skins, representing 118 species and subspecies, including 32 birds new to the colony, and forms the basis of Mr. Lowe's paper published in the current number of 'The Ibis' (*cf.* pp. 265-282).

Commander Dane has generously presented the birds obtained to the Natural History Museum, where they form a most valuable addition to our West African collections.

In the following pages I have attempted to bring up to date the list of birds known to have occurred in the Sierra Leone Protectorate, somewhat on the lines of Professor Neumann's List of Birds of the Lower Senegal Region (*cf.* Journ. Ornith. LXV. vol. ii. 1917, pp. 189-213.)

The specific or subspecific name of the race to which the form is now supposed to belong is given in full, together with the author of the name used. Following this are the names of the collectors who have actually obtained the birds against which the names are placed.

With the exception of Afzelius, Kemp, Kelsall, and W. P. Lowe, the other collectors mentioned have only obtained a few odd birds, which have either been noticed casually (as, for instance, those of Dr. Fergusson) in such works as 'The Catalogue of the Birds in the Collection of Sir William Jardine,' or by Cassin or Fraser, who, in the various publications to which they contributed (*vide* List of Literature), usually mentioned the source from which their Sierra Leone birds had been obtained, and thus gave a clue to the actual collector of the birds described by them. Other collectors' names, again, have simply been copied from labels of Sierra Leone birds in the British Museum Collection.

Lowe i. following a bird's name in the List signifies that

that particular species was obtained by Mr. Willoughby Lowe during his first visit to the Colony in 1911, while Lowe ii. signifies that the bird was obtained by him during his recent visit in 1920.

Anyone checking this List must remember that nomenclature is in what may be termed a transition stage at the present time, and in consequence many of the names used by Kemp in 1905 and by myself in 1912 have been rejected in favour of one we now know to be more correct. All old references are included, but often under a different name.

The specific nomenclature has been carefully revised and brought up to date, but individual judgment in accepting new names or discussing old ones has, in certain cases, been exercised by the writer.

SYSTEMATIC LIST

of the Birds of Sierra Leone, with names of Collectors.

Family CORVIDÆ [Crows].

Corvus scapulatus Daud. (Kemp, Kelsall, Lowe ii.)

Picathartes gymnocephalus (Temm.). (Kelsall.)

? *Cryptorhina afra* (Linn.). (Fergusson *.)

Family DICRURIDÆ [Drongos].

Dicrurus assimilis atactus Oberholser. (Kemp, Kelsall, Lowe ii.)

Dicrurus atripennis Swains. (Fergusson, Kelsall.)

Dicrurus assimilis ? *divaricatus* (Licht.). (Fergusson.)

Family ORIOLIDÆ [Orioles].

Oriolus nigripennis Verr. (Kemp, Kelsall.)

Oriolus auratus Vieill. (Kelsall.)

Oriolus larvatus rolleti Salvad. (Kelsall.)

* In this List, birds collected by Fergusson in Sierra Leone were named by Sir William Jardine, and duly recorded by him in his Catalogue of the Jardine Collection (1874).

Family STURNIDÆ [Starlings].

? *Buphaga africana* Linn. (Fergusson.)

Cinnyricinclus leucogaster leucogaster (Gmel.). (Kemp,
Kelsall, Lowe i, ii.)

Onychognathus hartlaubi Gray. (Kemp.)

Lamprocolius cupreicauda Hartl. (Kemp.)

Lamprocolius splendidus (Vieill.). (Kelsall.)

? *Lamprotornis caudatus* (Müll.). (Fergusson.)

Family PLOCEIDÆ [Weavers].

? *Steganura** *paradisea* (Linn.). (Fergusson.)

Vidua serena (Linn.). (Kemp, Kelsall.)

Coliuspasser concolor (Cass.). (Afzelius, Kelsall.)

Penthetriopsis macrura (Gmel.). (Kemp, Kelsall, Lowe ii.)

Pyromelana hordacea † *hordacea* (Linn.). (Kemp, Kelsall,
Lowe ii.)

Pyromelana afra (Gmel.). (Kemp, Kelsall.)

Pyrenestes ostrinus coccineus Cass. (Kemp, Kelsall,
Lowe i, ii.)

Quelea erythrops (Hartl.). (Kemp, Kelsall.)

Spermestes bicolor (Fraser). (Kemp, Kelsall, Lowe i, ii.)

Spermestes cucullatus Swains. (Afzelius, Kemp, Kelsall,
Lowe i, ii.)

Amauresthes fringilloides (Lafr.). (Kemp.)

Ortygospiza atricollis ansorgei Grant. (Lowe ii.)

Lagonosticta senegala (Linn.). (Kemp, Kelsall.)

Lagonosticta polionota Shelley. (Kemp, Kelsall, Lowe ii.)

Lagonosticta brunneiceps Sharpe. (Lowe i.)

* It is doubtful to which form the Paradise Weaver, said to have been obtained by Fergusson in Sierra Leone, would belong. The North African race is *S. p. verreauxi* (Cassin), while the birds from the Gambia and Senegal have been named *S. p. aucupum* by Neumann.

† *Pyromelana flammeiceps* (Swains.) et auct. (cf. Ibis, 1920, p. 849).

- Hypargos schlegeli* (Sharpe). (Sabine, Kemp, Kelsall.)
Nigrita bicolor (Hartl.). (Kemp, Kelsall.)
Nigrita emiliæ Sharpe. (Kemp, Kelsall, Lowe i, ii.)
Estrilda melpoda (Vieill.). (Kemp, Kelsall.)
Estrilda subflava (Vieill.). (Kemp.)
Estrilda astrild occidentalis Fraser. (Kemp, Kelsall.)
Sitagra ocularius brachypterus (Swains.). (Fergusson,
 ? Forbes, Kemp, Kelsall, Lowe i, ii.)
Hyphantornis cucullatus (Müll.). (Afzelius, Kemp, Kelsall,
 Lowe i, ii.)
Pachyphantes scutatus superciliosus (Shelley). (Kelsall,
 Lowe ii.)
Melanopteryx castaneofuscus (Less.). (Kemp, Kelsall,
 Lowe i, ii.)
Melanopteryx fuscocastaneus (Boc.). (Sabine, Kemp,
 Kelsall.)
Melanopteryx albinucha (Boc.). (Kemp.)
Malimbus malimbicus melanobrephos Hartert. (Kemp,
 Kelsall.)
Malimbus rubricollis bartletti Sharpe. (Kemp.)
Malimbus nitens (Gray). (Afzelius, Sabine, Kelsall.)
Malimbus scutatus scutatus (Cassin). (Brit. Mus. ex Tweed-
 dale Coll.)
Spermospiza hæmatina leonina Neum. (Kemp, Kelsall,
 Lowe ii.)

Family FRINGILLIDÆ [Finches].

- Serinus hartlaubi* (Bolle). (Kelsall.)
Anomalospiza imberbis (Cab.). (Kemp.)

Family MOTACILLIDÆ [Wagtails and Pipits].

- Budytes flava flava* (Linn.). (Kemp, Kelsall, Lowe ii.)
Motacilla vidua Sund. (Kelsall.)
 ? *Anthus campestris* (Linn.). (Fergusson.)

Anthus leucophrys gouldii Fraser. (Kemp, Kelsall, Lowe i, ii.)

Anthus trivialis trivialis (Linn.). (Kemp.)

Macronyx croceus croceus (Vieill.). (Kemp, Kelsall,
Lowe i, ii.)

Family NECTARINIIDÆ [Sunbirds].

Cinnyris cupreus (Shaw). (Kemp, Kelsall, Lowe ii.)

Cinnyris johannæ Verr. (Kemp.)

Cinnyris splendidus (Shaw). (Fergusson, Kelsall, Lowe i.)

Cinnyris venustus venustus (Shaw). (Kelsall, Lowe ii.)

Cinnyris chloropygius chloropygius (Jard.). (Kemp, Kelsall,
Lowe i, ii.)

Chalcomitra senegalensis senegalensis (Linn.). (Fergusson.)

Cyanomitra obscura obscura (Jard.). (Kemp, Kelsall, Lowe ii.)

Cyanomitra verticalis verticalis (Lath.). (Fergusson, Kemp,
Kelsall, Lowe i, ii.)

Anthothreptes collaris hypodila (Jard.). (Kemp, Kelsall,
Lowe i.)

Anthothreptes gabonica (Hartl.). (Kelsall, Lowe ii.)

Anthothreptes idia Oberh. (Kelsall.)

Family ZOSTEROPIDÆ [White-eyes].

Zosterops senegalensis senegalensis Bonap. (Kemp, Kelsall,
Lowe i, ii.)

Family PARIDÆ [Titmice].

Melaniparus niger guineensis Shelley. (Kelsall.)

Pholidornis rushiæ ussheri Hartert. (Kelsall.)

Family LANIIDÆ [Shrikes].

Fiscus collaris smithi (Fraser). (Kemp, Kelsall, Lowe ii.)

Lanius senator senator Linn. (Fergusson.)

Laniarius leucorhynchus (Hartl.). (Kemp, Kelsall.)

Laniarius turatii (Verr.). (Kelsall, Lowe ii.)

Laniarius barbarus helenæ Kelsall. (Kelsall.)

Laniarius barbarus barbarus (Linn.). (Fergusson *, Clark †.)

Dryoscopus gambensis gambensis (Licht.). (Afzelius, Fraser, Kelsall, Lowe i, ii.)

Chaunonotus sabini sabini (Gray). (Sabine, McDowell, Kemp, Kelsall.)

Tschagra senegala senegala (Linn.). (Kemp, Kelsall, Lowe i, ii.)

Tschagra australis ussheri (Sharpe). (Kemp, Kelsall.)

Antichromus minutus minutus (Hartl.). (Lowe ii.)

? *Malaconotus olivaceus olivaceus* (Vieill.). (Forbes.)

Malaconotus cruentus (Less.). (Kemp.)

Chlorophoneus multicolor (Gray). (Kemp, Kelsall.)

Chlorophoneus sulfureopectus sulfureopectus (Less.).
(? Fergusson, Kelsall, Lowe ii.)

Nicator chloris chloris (Less.). (Kemp, Kelsall.)

Sigmodus caniceps caniceps Bonap. (Kemp.)

Corvinella corvina corvina (Shaw). (Fergusson.)

Family PRIONOPIDÆ [Wood-Shrikes].

Fraseria prospora Oberh. (Kelsall.)

Family SYLVIIDÆ [Warblers].

Melocichla mentalis mentalis (Fraser). (Kemp, Kelsall, Lowe ii.)

Cisticola rufopileata rufopileata Rehw. (Lowe ii.)

Cisticola erythrops erythrops (Hartl.). (Kemp, Kelsall, Lowe ii.)

Cisticola brachyptera (Sharpe). (Lowe i, ii, Kelsall, Scovil.)

Cisticola lateralis (Fraser). (Kelsall, Lowe ii, Scovil.)

Cisticola cisticola uropygialis (Fraser). (Kelsall.)

* Recorded by Jardine in his Catalogue.

† Recorded by Reichenow, Vög. Afr. ii. p. 588.

- Cisticola terrestris*, subsp. ? (Lowe ii, Scovil.)
Cisticola natalensis strangei (Fraser). (Kelsall.)
Cisticola semitorques swanzii (Sharpe). (Kelsall.)
Sylvia simplex Lath. (Kemp, Kelsall, Lowe i, ii.)
Phylloscopus trochilus trochilus (Linn.). (Kemp, Kelsall.)
Sylviella flaviventris flaviventris (Sharpe). (Kelsall.)
Sylviella hardyi Bannerm. (Kelsall, Lowe i.)
 ? *Eremomela badiceps* (Fraser). (*Ex* Jardine Coll.)
Eremomela pusilla Hartl. (Kelsall, Lowe ii.)
Prinia mystacea melanorhyncha (Jard.). (Kemp, ? Kelsall, Lowe ii.)
Hylia prasina Cass. (Kemp, Kelsall, Lowe ii.)
Stiphrornis erythrothorax Hartl. (*Ex* Jardine Coll., Kelsall.)
Camaroptera griseiviridis tinctoria Cass. (Kemp, Kelsall, Lowe ii.)
Camaroptera chloronota Rehw. (Kelsall.)
Camaroptera superciliaris (Fraser). (Kelsall.)

Family TURDIDÆ [Thrushes].

- Turdus liboniansis lugubris* Bodd. (Kelsall, Kemp, Lowe i, ii.)
Luscinia megarhynchos megarhynchos Brehm. (Kelsall.)
 * *Bessonornis verticalis verticalis* Hartl. (Kelsall, Lowe i.)
 * *Bessonornis cyanocampter cyanocampter* (Bonap.). (Kelsall.)
 * *Bessonornis albicapilla albicapilla* (Vieill.). (Afzelius, ? Fergusson.)
Alethe diademata (Bonap.). (Kemp.)
Alethe poliocephala castanonota Sharpe. (Kelsall.)
Pentholæa frontalis (Swains.). (Lowe ii.)
Saxicola rubetra rubetra (Linn.). (Fergusson, Kemp, Kelsall, Lowe i, ii.)
Ænanthe ænanthe leucorrhœa (Gmel.). (Kemp, Lowe i.)

* *Cossypha* auct. (*cf.* Ibis, 1920, p. 851).

Family TIMELIIDÆ [Babblers].

- Hypergerus atriceps* (Less.). (Kelsall.)
 * *Turdoides platycircus* Swains. (Kelsall.)
 * *Turdoides atripennis atripennis* (Swains.). (Afzelius.)
Macrosphenus concolor (Hartl.). (Kemp.)
*Macrosphenus kemp*i (Sharpe). (Kemp, Kelsall.)
Macrosphenus zenkeri Reichw. (Kelsall.)
Turdinus hypoleucus Sharpe. (Kelsall.)
Turdinus gularis (Sharpe). (Kelsall.)
Turdinus fulvescens (Cass.). (Kemp).

Family PYCNONOTIDÆ [Bulbuls].

- Pycnonotus barbatus inornatus* Hartl. (Kemp, Kelsall, Lowe ii.)
Criniger barbatus (Temm.). (Kelsall.)
Criniger verreauxi verreauxi Sharpe. (Kelsall.)
Bleda canicapilla (Hartl.). (Kemp, Kelsall.)
Bleda syndactyla (Swains.). (Kelsall.)
Phyllastrephus simplex (Hartl.). (Kemp, Kelsall, Lowe i, ii.)
Phyllastrephus icterinus (Bonap.). (Kelsall.)
Andropadus gracilis Cab. (Kelsall, Lowe i.)
Andropadus latirostris congener Rehw. (Kelsall.)
Andropadus serinus (Verr.). (Kelsall.)
Andropadus indicator leucurus (Cass.). (MacDowell, Kelsall, Lowe ii.)
Andropadus virens virens Cass. (Kemp, Kelsall, Lowe i, ii.)
Andropadus curvirostris curvirostris Cass. (Kemp.)
Andropadus gracilirostris Strickl. (Kemp, Lowe ii.)

Family CAMPOPHAGIDÆ [Cuckoo-Shrikes].

- Cyanograucalus azureus* (Cass.). (MacDowell, Kelsall.)
Graucalus pectoralis (Jardine & Selby). (Brit. Mus. ex Jardine Coll., type.)

* *Crateropus* auct. (*cf.* Ibis, 1820, p. 851).

Campophaga phœnicea (Lath.). (Kemp, Kelsall, Lowe ii.)

Campophaga quiscalina Finsch. (? *E.* Jardine Coll., Kelsall.)

Family MUSCICAPIDÆ [Flycatchers].

Bradyornis murinus modestus Shelley. (Lowe ii.)

Batis senegalensis togoensis Neumann. (Lowe ii.)

Diaphorophya blissetti Sharpe. (Kemp, Kelsall.)

Diaphorophya castanea (Fraser). (Kemp.)

Diaphorophya hormophora Rehw. (Kelsall.)

Bias musicus (Vieill.). (Kemp, Kelsall, Lowe i, ii.)

Platysteira cyanea cyanea Müll. (Kemp, Kelsall, Lowe i, ii.)

Artomyias ussheri Sharpe. (Kelsall.)

Hyliota flavigastra flavigastra (Swains.). (Fergusson, Kelsall.)

Trochocercus nitens reichenowi Sharpe. (Kemp.)

Tchitrea nigriceps (Hartl.). (Marche & Compiègne, Kemp, Kelsall, Lowe ii.)

Tchitrea viridis viridis (Müll.). (Fergusson, Lowe ii.)

Elminia longicauda (Swains.). (Kelsall, Lowe i.)

Stizorhina finschi (Sharpe). (Kelsall.)

Family HIRUNDINIDÆ [Swallows].

Hirundo rustica rustica Linn. (Kelsall, Lowe ii.)

Hirundo semirufa gordonii Jard. (Kelsall, Lowe ii.)

Psolidoprocne obscura (Hartl.). (Kelsall, Lowe i, ii.)

Riparia riparia riparia (Linn.). (Lowe ii.)

Family PITTIDÆ [Ant-Thrushes].

Pitta pulih Fraser. (Fraser, Kemp.)

Family PICIDÆ [Woodpeckers].

Mesopicus pyrrhogaster (Mall.). (Afzelius [according to Malherbe], Kemp, Kelsall.)

Mesopicus goertæ poicephalus (Swains.). (Kelsall, Lowe i.)

Dendromus nivosus nivosus Swains. (Kemp, Kelsall, Lowe ii.)

Dendromus maculosus (Val.). (Kemp, Kelsall, Lowe i, ii.)

Dendromus caroli arizelus Oberh. (Kelsall.)

Dendropicus lufresnayi zechi Neum. (Kelsall, Lowe i, ii.)

Dendropicus lugubris Hartl. (Kemp, Kelsall, Lowe ii.)

Family INDICATORIDÆ [Honey-Guides].

Indicator, species uncertain. (Kelsall.)

Indicator exilis leona (C. Grant). (Lowe i.)

Family CAPITONIDÆ [Barbets].

Lybius bidentatus bidentatus (Shaw). (Kelsall, Lowe i, ii.)

Lybius vieilloti rubescens (Temm.). (Kelsall, Lowe ii.)

Gymnobucco calvus (Lafr.). (Kelsall.)

Pogoniulus erythronota (Cuv.). (Kelsall, Lowe ii.)

Pogoniulus chrysopyga Shelley. (Kelsall.)

Pogoniulus scolopaceus scolopaceus (Bonap.). (Kemp, Kelsall,
Lowe i, ii.)

Trachylæmus goffini (Schl.). (Kemp, Kelsall.)

Family MUSOPHAGIDÆ [Plantain-eaters].

Turacus macrorhynchus (Fraser). (Afzelius, Kemp, Kelsall.)

Turacus buffoni Vieill. (Afzelius, Kemp, Kelsall, Lowe ii.)

Musophaga violacea Isert. (Fergusson for Jardine.)

Corythæola cristata (Vieill.). (Afzelius, *ex* Jardine Coll.,
Kemp, Kelsall.)

* *Crinifer africana africana* (Lath.). (Kemp, Kelsall, Lowe ii.)

Family CUCULIDÆ [Cuckoos].

Clamator glandarius (Linn.). (Lowe ii.)

Clamator cafer (Licht.). (Fraser, Clark, Kemp, Kelsall.)

Cuculus clamosus Lath. (Kemp, Kelsall.)

* *Chizærhis* auct.

Chrysococcyx cupreus cupreus (Shaw). (Chamley, Kelsall.)
[= *C. smaragdineus*, auct.].

Chrysococcyx caprius (Bodd.). (Kemp, Kelsall, Lowe ii.)
[= *C. cupreus* Bodd. et auct.].

Chrysococcyx klaasi (Steph.). (Kelsall, Lowe ii.)

Centropus senegalensis senegalensis (Linn.). (Afzelius, Kemp,
Kelsall, Lowe i, ii.)

Centropus francisii Bonap. (Lowe ii.)

Ceuthmochares aereus flavirostris (Swains.). (Afzelius, Sabine,
Clark, Kemp, Kelsall, Lowe i, ii.)

Family CYPSELIDÆ [Swifts].

Chætura sabinei Gray. (Sabine, Kelsall.)

Tachornis parvus brachypterus Rehw. (Kelsall, Lowe i, ii.)

Micropus affinis (Hardw.). (Kelsall, Lowe ii.)

* *Micropus æquatorialis lowei* (Bannerman). (Lowe ii.)

Family CAPRIMULGIDÆ [Nightjars].

Scotornis climacurus (Vieill.). (Kemp, Kelsall, Lowe ii.)

† *Macrodipteryx longipennis* (Shaw). (Afzelius, Sabine,
Kemp, Kelsall.)

Family BUCEROTIDÆ [Hornbills].

Lophoceros semifasciatus (Hartl.). (Kemp, Kelsall, Lowe ii.)

Lophoceros nasutus nasutus (Linn.). (Lowe ii.)

Bycanistes cylindricus (Temm.). (Kelsall.)

Bycanistes fistulator (Cass.). (Lowe ii.)

Ceratogymna elata (Temm.). (Afzelius, Kemp.)

Bucorvus sp.? (Lowe ii.)

* For remarks on this new Swift, see note by myself following introduction to Mr. Lowe's paper (*ante*, p. 266).

† Major Claude Grant has conclusively shown ('Ibis,' 1915, p. 302) that Afzelius's name *macrodipterus* for this Nightjar cannot stand.

Family MEROPIDÆ [Bee-eaters].

Melittophagus gularis gularis (Shaw & Nodd.). (Afzelius, Kemp, Kelsall.)

Melittophagus pusillus pusillus (Müll.). (Kemp, Kelsall.)

Aerops albicollis albicollis (Vieill.). (Jardine, Marche & Compiègne, Stephens, Bartlett, Kemp, Kelsall, Lowe i, ii.)

Merops persicus chrysocercus Cabanis. (Kelsall, Lowe ii.)

Merops nubicus nubicus Gmel. (Kelsall.)

Merops mentalis mentalis Cabanis. (Kelsall.)

Family UPUPIDÆ [Hoopoes and Wood-Hoopoes].

* *Phoniculus erythrorhynchus senegalensis* (Vieill.).
(Fergusson.)

Family CORACIIDÆ [Rollers].

Coracias abyssinus senegalensis Gmel. (Fergusson, Kemp, Kelsall.)

Coracias cyanogaster Cuv. (Kelsall.)

Eurystomus afer afer (Lath.). (Bartlett, Kemp, Kelsall, Lowe † ii.)

Eurystomus gularis Vieill. (*Ex* Jardine Coll., Kemp, Kelsall.)

Family ALCEDINIDÆ [Kingfishers].

Ceryle maxima gigantea (Swains.). (Lowe i.)

Ceryle rudis rudis (Linn.). (Afzelius, Fergusson, Kelsall, Lowe i, ii.)

Halcyon chelicuti (Stanl.). (Fergusson.)

Halcyon leucocephala leucocephala (Müll.). (Kemp, Kelsall.)

Halcyon senegalensis senegalensis (Linn.). (Kemp, Kelsall.)

* *Irrisor* auct.

† Seen only by this collector.

Halcyon malimbicus forbesi Sharpe. (Afzelius, Marche & Compiègne, Kemp, Kelsall, Lowe i, ii.)

Alcedo quadribrachys quadribrachys Bonap. (Kemp, Kelsall, Lowe i.)

Corythornis cristata (Vroeg). (Kemp, Kelsall, Lowe i.)

Ispidina picta picta (Bodd.). (Kemp, Lowe ii.)

Ispidina leucogaster (Fraser). (Kelsall.)

Family PSITTACIDÆ [Parrots].

Psittacus erithacus timneh Fraser. (Kelsall, Lowe ii.)

**Agapornis pullarius pullarius* (Linn.). (Kelsall, Lowe ii.)

Family STRIGIDÆ [Owls].

Bubo leucostictus Hartl. (Kemp.)

Bubo poensis Fraser. (Kemp.)

Bubo africanus cinerascens Guér. (Lowe ii.)

Otus leucotis leucotis (Temm.). (Fergusson, Kemp, Kelsall.)

†*Tyto alba alba* (Scop.). (Kemp.)

Syrnium nuchale Sharpe. (Kemp, Lowe ii.)

Family FALCONIDÆ [Hawks].

Gymnogenys typicus (Smith). (Kemp, Kelsall, Lowe i.)

Astur badius sphenurus (Rüpp.). (Kemp, Lowe ii.)

Astur tachiro macroscelides (Temm.). (Kemp.)

Accipiter hartlaubi hartlaubi (Verr.). (Kemp.)

Buteo auguralis Salvad. (Kelsall, Lowe i, ii.)

* The type-locality of this species is Nubia. West African examples may eventually require separating.

† This bird is not *T. a. maculata* (Brehm) as Kemp recorded it, or, as it should now be called, *T. a. affinis*, the ordinary African Barn-Owl. It is almost pure white on the underside, and hardly spotted at all. The upper-parts are very grey and much paler than in African specimens. As Selater and Praed remark, it is nearer typical *T. alba alba*.

* *Aquila wahlbergi* Sundev. (Lowe ii.)

* *Spizaetus coronatus* (Linn.). (Lowe ii.)

Kaupifalco monogrammicus monogrammicus (Temm.).

(Fergusson, Kemp, Kelsall, Lowe ii.)

* *Cuncuma vocifer* (Daud.). (Lowe ii.)

Circaetus cinereus Vieill. (Lowe ii.)

Milvus migrans parasitus Daud. (Kemp, Kelsall, Lowe ii.)

Elanus caeruleus caeruleus (Desf.). (Kemp, Kelsall.)

Aviceda cuculoides cuculoides (Swains.). (Kemp.)

* *Pandion haliaetus haliaetus* (Linn.). (Lowe ii.)

Gypohierax angolensis (Gmel.). (Kemp, Kelsall, Lowe† ii.)

Family VULTURIDÆ [Vultures].

Necrosyrtes monachus monachus (Linn.). (Lowe ii.)

Family PELECANIDÆ [Pelicans].

Pelecanus, species uncertain. (Lowe ‡ ii.)

Family PHALACROCORACIDÆ [Cormorants].

Phalacrocorax africanus (Gmel.). (Kemp, Kelsall, Lowe ii.)

Anhinga rufa (Lacép., Daud.). (Kemp, Kelsall, Lowe ii.)

Family ANATIDÆ [Ducks].

Dendrocygna viduata (Linn.). (Kemp, Kelsall.)

Pteronetta cyanoptera (Temm.). (Kelsall.)

Family IBIDIDÆ [Ibises].

Plegadis autumnalis (Hasselq.). (Kemp.)

[*falcinellus*, auct.]

* These species were seen only, not obtained.

† Seen only by Mr. Lowe and not obtained.

‡ Mr. Lowe believed the Pelican he saw off Tasso Island to be *P. onocrotalus sharpei*; he did not succeed in procuring a specimen.

Family CICONIIDÆ [Storks].

Dissoura episcopus microscelis (Gray). (Kelsall.)

Family SCOPIDÆ [Hammer-heads].

Scopus umbretta umbretta Gmel. (Kelsall.)

Family ARDEIDÆ [Hérons].

* *Ardea goliath* Cretschm. (Lowe ii.)

Ardea cinerea Linn. (Kemp, Lowe.)

Demigretta gularis gularis (Bosc). (Lowe i, ii.)

Melanophoyx ardesiaca (Wagl.). (Lowe ii.)

Nycticorax nycticorax nycticorax (Linn.). (Kelsall, Lowe ii.)

Butorides atricapilla (Afzel.). (Kemp, Kelsall, Lowe i, ii.)

Tigrornis leucolopha (Jardine). (Kemp.)

Ardeola ibis ibis (Linn.). (Lowe ii.)

Ardeirallus sturmi (Wagl.). (Kelsall.)

Family HELIORNITHIDÆ [Fin-feet].

Podica senegalensis senegalensis (Vieill.). (Kelsall.)

Family CHARADRIIDÆ [Waders].

Gallinago gallinago gallinago (Linn.). (Kemp.)

Tringa ferruginea ferruginea Brünnich. (Lowe ii.)

Calidris arenaria (Linn.). (Kelsall.)

Totanus totanus (Linn.). (Lowe ii.)

Totanus nebularius (Gunn.). (Kelsall, Lowe i.)

Totanus hypoleucus (Linn.). (Kemp, Kelsall, Lowe i.)

Rhyacophilus glareola (Linn.). (Lowe ii.)

Numenius arquatus arquatus (Linn.). (Kelsall, Lowe * ii.)

Numenius phaeopus phaeopus (Linn.). (Kelsall, Lowe ii.)

Himantopus himantopus (Linn.). (Kelsall.)

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* Seen only by this collector.

**Squatarola squatarola* (Lowe ii.)

Stephanibyx lugubris (Lesson †). (Kelsall.)

[= *S. inornatus*, auct.]

Oxyechus forbesi (Shelley). (Kelsall.)

Charadrius hiaticula hiaticula (Linn.). (Kelsall.)

Pluvianus ægyptius (Linn.). (Kelsall.)

Arenaria interpres interpres (Linn.). (Kelsall, Lowe ii.)

Family LARIDÆ [Gulls and Terns].

Larus fuscus fuscus (Linn.). (Lowe ii.)

Larus fuscus affinis (Reinh.). (Lowe i.)

Larus cirrhocephalus Vieill. (Lowe i, ii.)

Sterna maxima Bodd. (Kelsall, Lowe i, ii.)

Sterna sandvicensis sandvicensis Lath. (Kelsall, Lowe i.)

Sterna, sp. [? *dougalli* Mont.]. (Lowe ii.)

Hydrochelidon nigra (Linn.). (Lowe ii.)

Hydrochelidon hybrida (Pall.). (Lowe ii.)

Family RALLIDÆ [Rails].

Sarothrura bohmi danei Bannerm. (Kemp.)

Porphyrio alleni Thoms. (Kelsall.)

Family COLUMBIDÆ [Pigeons].

Streptopelia semitorquata erythrophrys (Swains.). (Kemp, Kelsall, Lowe * ii.)

Turturona iriditorques (Cass.). (Kemp, Kelsall, Lowe ii.)

Calopelia puella (Schl.). (Ex Jardine Coll., Kemp, Kelsall.)

Turtur afra afra (Linn.). (Kemp, Kelsall, Lowe ii.)

Tympanistria tympanistria (Temm.). (Kemp, Kelsall, Lowe i.)

Vinago calva calva (Temm.). (Kemp, Kelsall, Lowe * ii.)

* Seen only, not obtained.

† *lugubris* Lesson has priority over *inornatus* Swains. (cf. C. Grant, 'Ibis,' 1915, p. 56).

Family TURNICIDÆ [Hemipodes].

Turnix nana (Sund.). (Kelsall.)

Family PHASIANIDÆ [Game-Birds].

Francolinus bicalcaratus thornei Grant. (Thorne, Parks, Kemp, Kelsall, Lowe i, ii.)*Francolinus lathami lathami* Hartl. (Kemp.)*Francolinus ahantensis* Temm. (Kemp, Kelsall.)? *Ptilopachus fuscus fuscus* Vieill. (P. Niel *ex* Jardine Coll.)* *Coturnix coturnix*. (Kelsall.)*Excalfactoria adansoni* (Verr.). (Kelsall.)*Guttera cristata* (Pall.). (Afzelius, Manger.)*Numida meleagris* Linn. (Lowe ii.)XVI.—*J. F. Miller's Icones.*

By C. DAVIES SHERBORN and TOM IREDALE.

MILLER'S *Icones Animalium*: [Various Subjects of Natural History] 1776–1785, may be regarded as a rare book. Dryander, *Cat. Bibl. Banks*, states “10 pp., 60 pls.”; Pritzel copies him; Watts gives no details, but wrote “London, 1785: Large folio. £6. 6. 0.” Lowndes says “1785. 176 pp., 12 pls. and 2 leaves of text”; Engelmann contents himself with “In Nos. 1785.” Eliminating Lowndes' entry which is obviously incorrect, the conclusion can be reached that the book was issued in 10 parts and contained 60 plates, which is the extent of the ‘*Cimelia Physica*,’ a well-known work. The ‘*Cimelia Physica*’ was issued in 1796, and consists of 60 plates by Miller with 106 pages of explanatory text written by George Shaw.

When Sherborn completed the ‘*Index Animalium*’ 1758–1800, the only known (to him) copy was in the British Museum from Sir Joseph Banks's library, and this contained

* Named binominally and no author given, as it is not clear which Quail is intended.

only 36 plates with six sheets of explanatory text. The names there introduced were duly recorded in the Index. A few days ago Sherborn secured a fine copy which contained 54 plates and 9 sheets of text. These sheets are bound in position each with six plates succeeding, so that the work was apparently issued in parts, each part with 1 sheet and 6 plates; and thus now we have evidence of the first nine parts, the tenth being yet unknown to us in the original state. From internal evidence we conclude the parts were issued at about the following dates:—pt. I. 1776; pt. II. 1776; pt. III. 1777; pt. IV. 1777 or 1778; pt. V. 1779 or 1780; pt. VI. 1782; pt. VII. 1782; pt. VIII. 1783; pt. IX. 1784, and pt. X. 1785.

That it was issued in parts seems certain from Latham's quotations, as instance: in the first volume of the 'General Synopsis of Birds' in the synonymy of the Secretary Vulture (p. 20) Latham cited "*Falco serpentarius* J. F. Miller t. 28." As Latham's preface is dated Jan. 1, 1781, Miller's plate apparently appeared prior to that date. At the end of vol. II. Latham includes "A Catalogue of the Principal Authors," and there gives:—

"<i>Miller Illustr.</i> <i>J. F. Miller, Misc. Plates</i>	}	By this is meant Miscellaneous Plates of <i>Quadrupeds, Birds, &c.</i> coloured, in folio. By <i>John</i> <i>Frederick Miller.</i>"
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Latham's book was published in 1785, and he only cites the first thirty-six plates, which suggests the only copy he referred to was the one in the Banksian Library.

In the Nat. Miscellany, under pl. 533, Shaw wrote:—"The figure here given is copied from the beautiful representation published by Mr. Millar (*sic*) in his splendid plates of natural history"; and he quoted as well as "Cimelia Physica, p. 96, t. 52," "Millar (*sic*) Illustr. nat. hist. pl 52," which we regard as confirmation of independent publication.

As the 'Cimelia Physica' is an easily accessible work the details hereafter given are compared with that book. The date of this is 1796, and the title-page states:

“Figures by John Frederick Miller. With descriptions by George Shaw.” The plates are not so well coloured, and in cases of doubt reference to the original edition should be made. All the plates in the ‘Cimelia Physica’ are lettered, while in the original edition this is not so. The names in the text of the ‘Cimelia Physica’ are sometimes altered by Shaw, as are also some of the localities given by Miller in the original.

A complete collation is here appended, with notes on some interesting points.

- Pt. I. Plate 1. *Loxia oris*, dated Meh. 10, 1776.
Antholyza cunonia Bot.
2. *Loxia coronata*, dated 1776: in C. P. the text is headed
Loxia coronata var. *L. dominicanæ*.
Alstromeria ligta Bot.
3. *Loxia longicauda*, dated 1776: in C. P. the text is
headed *Emberiza imperialis*.
Gnaphalium eximium Bot.
4. *Psittacus atricapillus*, dated 1776: in C. P. the text is
headed *Psittacus melanocephalus*.
Chelone penstemon Bot.: also later altered to *Penstemon*
lævigata.
5. *Psittacus aurantius*, dated 1776: in C. P. the text is
headed *Psittacus solstitialis*.
Illicium floridanum Bot.
6. *Upupa promerops*, dated 1776.
Eryngium alpinum Bot.
- Pt. II. Plate 7. *Barringtonia speciosæ* Bot., dated 1776.
8. *Ampelis carolinensis*. Plate dated 1776, but not
named.
Locality given as “America septentrionali,” all the
preceding being without localities. In C. P. the text
is headed *Ampelis garrulus*.
Amaryllis crispa Bot.: later altered to *A. undulata*.
9. *Antholyza æthiopica* Bot. Plate dated 1776, but not
named.
10. *Cervus alces* Mamm. do. do.
11. *Lacerta chamælion* Rept. do. and named.
12. *Larus albus*. do. but not named.
Locality given as “in Regionibus septentrionalibus.”
- Pt. III. Plate 13. *Lemur murinus* Mamm. Plate named and dated 1777.
14. *Struthio casuarius*. Plate dated 1777, but not named.
Locality given as “Asia, Sumatra, Molucca, Banda.”
In C. P. the text is headed *Casuarius galeatus*.

- Plate 15. *Muscicapa striata*. Plate dated 1777, but no names.
 Locality given as "Ad fretum Hudsonis."
Ampelis cristata. Locality "in America."
16. *Columba coronata*. Plate dated 1777, but not named.
 Locality "Capite bonæ spei."
17. *Falco plancus*. Plate dated 1777, but not named.
 Locality "Tierra del Fuego."
18. *Falco fuscus*. Plate dated 1777, but not named.
 Locality "Greenlandia."
- Pt. IV. Plate 19. *Canis hyæna* Mamm. Plate neither named nor dated.
Canis Lupus, niger.
20. *Viverra tetradactyla* Mamm. Plate named but not dated.
21. *Parus hudsonicus*. Plate dated 1777, but no names.
 Locality "in America sept."
Fringilla hudsonica. Same locality.
Emberiza leucophrys. do.
 In C. P. in the text the name of the second is
 altered to *Emberiza hyemalis*.
22. *Platalea leucorodia*. Plate dated 1777, but not named.
 Locality "Europa."
23. *Aptenodytes patagonica*. Plate named but not dated.
 Locality "in Mari antarctico."
24. *Cuculus indicator*. Plate named but not dated.
 Locality "C. B. Spei."
Fringilla cyanocapilla. Locality "Senegal."
- Pt. V. Plate 25. *Brucea antidysenterica* Bot. Plate lettered "*Brucea*"
 only and not dated.
26. *Testudo sulcata* Rept. Plate neither named nor dated.
27. *Homo Lar* Mamm. Plate named but not dated.
 In C. P. the text is headed *Simia longimanus*.
28. *Falco serpentarius*. Plate named and dated 1779.
 Locality "Cap. B. Spei." In C. P. the text is
 headed *Vultur secretarius*.
29. *Psittacus guineensis*. Plate named but not dated.
 Locality "Guinea."
30. *Trochilus gularis*. Plate named but not dated.
 Locality "India orientali."
Fringilla torquator (on plate, *torquata* in text).
 Same locality.
Motacilla gularis. Locality "America meridionali."
- Pt. VI. Plate 31. *Jerboa capensis* Mamm. Plate named but not dated.
32. *Lemur bicolor* Mamm. do. and dated 1782.
33. *Otis indica*. do. but not dated.
 Locality "India orientali."
34. *Aptenodytes magellanica*. Plate named but not dated.
 Locality "Terra magellanica." Text in C. P. headed
Pinguinaria magellanica.

- Plate 35. *Ardea neri*. Plate named but not dated.
Locality "America meridionali."
36. *Ardea torquata*. Plate named and dated May 16, 1782.
Same locality. In C. P. these two plates are transposed and text headed to agree, though the plates retain the original numbering.
- Pt. VII. Plate 37. *Carolinea princeps* Bot. All plates from here to end named but not dated.
38. *Motacilla thoracica*. "India orientali." In C. P. text headed *Motacilla aurata*.
Heliconia marantifolia Bot.
39. *Felis capensis* Mamm. "C. B. Spei."
40. *Aptenodytes antarctica*. "in Antartico." Text in C. P. headed *Pinguinaria antarctica*.
41. *Coracias versicolor*. "in Surinamo."
42. *Fringilla brevicola*. "Zeylona." In C. P. the text is headed *Loxia zeylonica*.
Fringilla atrocephala. "America meridionali." In C. P. the text is headed *Fringilla melanocephala*.
- Pt. VIII. Plate 43. *Hibiscus cannabina* Bot. In C. P. this is altered in text to *Hibiscus speciosus*.
44. *Antirrhinum quadrifolium* Bot.
45. *Aristolochia hirsuta* Bot.
46. *Sciurus fulvus* Mamm. "America meridionali."
47. *Trochilus maculata*. "America meridionali."
Rallus ecaudata. "in Otaheita."
48. *Cuculus aurocephalus*. "America meridionali." In C. P. the text is headed *Cuculus chrysocephalus*.
- Pt. IX. Plate 49. *Aptenodytes crestata*. "Falkland Island." In C. P. the text is headed *Pinguinaria cirrhata*.
50. *Fringilla forficata*. "Zeylona."
Rallus nigra. "Otaheita." In C. P. the text is headed *Rallus tabuensis*.
51. *Cuculus crestata*. "India orientali." In C. P. the text is headed *Cuculus discolor*.
52. *Promerops purpureus*. "India orientali." In C. P. the text is headed "*Upupa erythrorhynchos*."
53. *Oriolus gularis*. "America meridionali." In C. P. the text is headed "*Oriolus pictus*."
54. *Picus quadrimaculata*. "Zeylona."

At this point the original copy studied ends, but as there are only 60 plates in the 'Cimelia Physica' the remaining six are here noted, all at present dating from 1796, though probably they will later prove to have been published in 1785, as suggested by Watts's entry : —

- Plate 55. *Hirundo zonaris*.
56. *Artonia capensis* Bot.
Oriolus trifasciatus.
57. *Ramphastos indicus*.
58. *Alcedo formosa*.
59. *Columba rosea*.
60. *Jerboa capensis* Mamm.

It is probable that were the first thirty-six plates carefully examined some alterations in ornithological nomenclature would be necessary. In the 'Auk,' 1908, p. 269 note, Riley comments upon *Falco fuscus* in connection with *Buteo platypterus*, but he does not appear to have seen the original edition, as he does not give the definite locality there mentioned, and, moreover, only quotes the book as appearing in six parts, each with six plates. In 'The Ibis,' 1915, p. 235, Claude Grant gave particulars of the plate of the Secretary Bird. He apparently did not go through the British Museum copy or he would have noted *Cuculus indicator*, which he discussed in the same paper. It is strange how African ornithological nomenclature is still in such a confused state with so many workers interested in the birds of that continent. Thus *Cuculus indicator* was first published by Sparrman in the Philos. Trans. vol. lxvii. pt. i. p. 43, 1777, and the genus name *Indicator* was first published by Stephens in Shaw's Zoology, vol. ix. p. 138, 1815, yet neither of these references is correctly quoted. The two most important changes noted in the foregoing are also in connection with African birds.

PHENICULUS PURPUREUS (Miller).

This now will be the correct name for the bird long known as *Irrisor viridis*, afterwards as *I. erythrorhynchus*.

RALLUS NIGRA Miller.

This name is undoubtedly earlier than *Rallus niger* Gmelin, and as it refers to a very different species two changes are necessary. In both complications can be observed, as *Rallus nigra* Miller is the bird long known as *Porzana tabuensis* (Gmelin), but the correct application of the latter name is

not definitely ascertained. Thus J. R. Forster described a black bird, but noted there was a brown variant. His son painted the Black Rail from "Taheitee," and this painting is preserved in the British Museum (Natural History), No. 130, with the native name "Maho" pencilled on it. This drawing was copied and published with little alteration by Miller under the name *Rallus nigra*. Forster's MS. name was *Rallus minutus*, and his localities were "Otaheitee et in Tonga-Tabu." Latham's descriptions were incorporated by Gmelin, who introduced Latin names, and this was called *Rallus tabuensis*, though Latham did not appear to have had specimens from Tongatabu. It is probable that the Tahitian Rail is distinct from the Tongatabu species, especially as a black Rail is known from Henderson Island, viz. *P. atra* North (= *murrayi* O.-Grant). However, it is impossible to continue the name *Limnocolaptes niger* (Gmelin) for the African Black Rail, and the choice seems to be between *Rallus carinatus* Swainson and *Gallinula flavirostra* Swainson, the latter introduced as the former was inapplicable and also indeterminate. Thence it would be that the African Rail would be called *Limnocolaptes flavirostra* (Swainson), but subspecies may be determinable.

PENNULA ECAUDATA (King).

Why this name was ever accepted is one of the puzzles provided for the present generation by the previous one of British ornithologists. The identification of "a rail, with very short wings and no tail, which on that account, we named *rallus ecaudotus* (sic)," is surely impossible, and fortunately the publication of Miller's plate under the same name negatives any further discussion. Miller's *Rallus ecaudata* was from Otaheitea, and proves to be an absolute copy of G. Forster's painting No. 127, which has been continually accepted as referable to the "Otaheitean" form of the Philippine Rail. What the name of the Sandwich Island *Pennula* is, appears again puzzling, as various students have arrived at different results, but probably Rothschild's usage of *Pennula millsii* with the other species *Pennula sandwichensis* is the best.

APTENODYTES CRESTATA Miller.

The complications around this name will be discussed later, as this is an Austral-Neozelanic species, and the details are very confusing.

ARDEA NÆVIA Miller.

This is earlier than *Ardea navia* Boddaert in use for the American form of *Nycticorax nycticorax*, and it appears doubtful whether these are exactly the same thing.

OTIS INDICA Miller.

This name was first proposed by Forster in 1781, but appears as an absolute *nomen nudum*. It has been used ex Gmelin, whose account is based solely on Miller, but has lately been rejected in favour of Latham's *aurita*. The beautiful painting seen in the original edition of Miller's plates so exactly applies to the "*Sypheotis*" that the name must be revived and the bird known as *Sypheotides indica* (Miller).

These notes will draw attention to the necessity of reconsidering the whole of the names involved in these works, and recourse can always be made to the volume here studied, which has been placed in the library of the British Museum (Natural History).

Mr. B. B. Woodward has pointed out to us that in Rees' New Cyclopædia, Vol. xxxii., under the article about George Shaw, it is definitely stated that sixty plates were published by Miller under the title "Various Subjects in Natural History, wherein are delineated Birds, Animals, and many curious Plants," but that the lack of letterpress proved a drawback, and consequently these plates were republished under the title "Cimelia Physica," descriptions being supplied by George Shaw. The title above cited agrees with that given by Watts, who adds "with the parts of Fructification of each Plant, all of which are drawn and coloured from Nature."

XVII.—REPORT of the Sub-committee, consisting of Dr. E. HARTERT, Messrs. T. IREDALE and W. L. SCLATER, on Amendments and proposed Alterations to the Names in the B. O. U. List of British Birds, as accepted by the Committee of the B. O. U. on the British Birds List.

The following recommendations were made :—

1. That the *nomina conserranda* in the B. O. U. List should not be used any longer, but the correct names under the rules should now be universally adopted.

There are thirteen of these *nomina conserranda*, and a list of them with their equivalent under the Rules of Nomenclature is given on p. 355 of the B. O. U. List, in Appendix II.

2. That in future, when a species has been divided into two or more subspecies, the typical subspecies should always be named trinominally. For example, the typical race of the Starling should be called *Sturnus vulgaris vulgaris* and not *Sturnus vulgaris*, as the use of the binomial form of the name causes confusion between the typical subspecies and the species as a whole, including all the races.

3. That the names in Vroeg's Catalogue be accepted. The following changes will result :

- p. 69. For *Sylvia subalpina* substitute
Sylvia cantillans (*Motacilla cantillans* [Pallas] in Vroeg's Cat. Verzam. Vogelen Adumbraticula, p. 4, 1764 : Italy.)
- p. 108. For *Muscicapa grisola* substitute
Muscicapa striata (*Motacilla striata* [Pallas], t. c. p. 3, 1764 : Holland).

- p. 109. For *Muscicapa atricapilla* substitute
Muscicapa hypoleuca (*Motacilla hypoleuca* [Pallas],
t. c. p. 3, 1764 : Holland).
- p. 167. For *Tadorna casarca* substitute
Casarca ferruginea (*Anas ferruginea* [Pallas], t. c.
p. 5, 1764 : Tartary).
- p. 224. For *Calidris arenaria* substitute
Crocethia alba (*Trynga alba* [Pallas], t. c. p. 7,
1764 : Coasts of Holland) *.
- p. 228. For *Totanus fuscus* substitute
Tringa erythropus (*Scolopax erythropus* [Pallas],
t. c. p. 6, 1764 : Holland) *.
- p. 299. For *Podiceps fluviatilis* substitute
Podiceps ruficollis (*Colymbus ruficollis* [Pallas], t. c.
p. 6, 1764 : Holland).

4. The following generic alterations were agreed to :—

- p. 7. Genus **Pyrrhocorax** Tunstall, Ornith. Brit. 1771, p. 2.
This name dates from 1771 instead of from 1816.
The type is the Cornish Chough (*Upupa pyrrhocorax*)
by monotypy and tautonymy, not the Alpine Chough
(*Pyrrhocorax graculus*) as stated on p. 356 of the
B. O. U. List (see Mathews and Iredale, Austr. Av.
Rec. iii. p. 119).
- p. 45. Genus **Anthus** Bechstein, Gemein. Naturg. Deutschl.
2nd ed. 1805, ii. pp. 247, 302, and 465. Type by
subsequent designation (Mathews, Austr. Av. Rec.
ii. p. 123, 1915), *Alauda campestris* Linn.
- p. 78. For Genus *Lusciniola* substitute
Herbivocula Swinboe, Proc. Zool. Soc. London, 1871,
p. 353. Type by monotypy *H. flemingi* = *Sylvia*
schwarzi Radde.
Lusciniola melanopogon, lately added to the B. O. U.
List, will of course remain in the genus *Lusciniola*, of
which it is the type.

* For generic changes, see below on pp. 312, 313.

- p. 78. For Genus *Hypolais* Brehm substitute
Hippolais Baldenstein, Neue Alpina, ii. p. 27, 1827.
 Type by monotypy *H. italica* Bald. = *H. polyglotta*
 (Vieill.).

The generic names of the Icterine, Melodious, and
 Olivaceous Warblers must also be changed to *Hip-*
polais (vide Mathews and Iredale, Austr. Av. Rec. iii.
 p. 122).

- p. 127. For *Flammea* substitute
Tyto Billberg, Synops. Faun. Scand. i. pt. 2, 1828,
 tab. A. Type *Strix alba* Scop. (cf. Mathews, Nov.
 Zool. xvii. 1910, p. 500, and Auk, 1920, p. 444).

- p. 216. The type of the genus *Tringa* is not *T. canutus*
 but *T. ochropus*, as was first pointed out by Mathews
 (Nov. Zool. xviii. 1911, p. 5). This and Richmond's
 discovery of the Anonymous reviewer in the Allg.
 Lit. Zeit. (cf. P. U. S. Nat. Mus. liii. p. 581) will
 involve considerable changes in the genera of the
 Stints and Sandpipers as follows:—

Genus **Calidris** Anon. Allg. Lit. Zeitung, 1804,
 vol. ii. col. 542. Type by tautonymy *Tringa calidris*
 Linn. = *Tringa canutus* Linn.

Genus **Erolia** Vieillot, Analyse, 1816, p. 55. Type
 by monotypy *E. variegata* Vieill. = *Tringa feruginea*
 Brün.; and the following species will stand as:

Erolia minuta, *E. minutilla*, *E. temmincki*, *E. macu-*
lata, *E. acuminata*, *E. bairdi*, *E. fuscicollis*, *E. mari-*
tima, *E. alpina*, and *E. ferruginea*.

For *Totanus* substitute

Tringa, type by tautonymy *T. ochropus* Linn., and
 the following species will stand as:

Tringa totanus, *T. erythropus*, *T. melanoleuca*,
T. flavipes, *T. stagnatilis*, *T. nebularia*, *T. hypo-*
leuca, *T. macularia*, *T. ochropus*, *T. glareola*, and
T. solitaria.

- p. 224. For Genus *Calidris* substitute

Crocethia Billberg, Synop. Faun. Scand. i. pt. 2, 1828, tab. A, p. 132. Type by monotypy *Tringa arenaria* Linn., since *Calidris* is preoccupied (*cf.* Richmond, P. U. S. Nat. Mus. liii. p. 581, and Auk. 1920, p. 443).

The only species is *Crocethia alba* (Pallas) (see above).

- p. 225. For Genus *Machetes* substitute

Philomachus Anonymous, Allg. Lit. Zeit. 1804, vol. ii. col. 542. Type by monotypy *Tringa pugnax* Linn. (*cf.* Richmond *supra*).

- p. 241. **Charadrius**. The type of this genus by Linnean tautonymy is *C. hiaticula* Linn. not *C. apricarius*, and the species listed under *Ægialitis* must become *Charadrius*.

For Genus *Charadrius* substitute

Pluvialis Brisson, Ornith. v. p. 42, 1760. Type by tautonymy *P. aurea* Brisson = *Charadrius apricarius* Linn.

- p. 243. Genus **Squatarola** Cuvier, Règne Anim. i. 1816, p. 467. Type by monotypy and tautonymy *Tringa squatarola* Linn.

The reference to Leach in the B. O. U. List is to an unpublished name, as Leach's work, though printed, was never published.

- p. 290. For Genus *Æstrelata* substitute

Pterodroma Bonaparte, Comptes Rend. xlii. 1856, p. 768. Type by subsequent designation (Coues, Proc. Acad. Nat. Sci. Philad. 1866, p. 137) *Procel-laria macroptera* Smith.

- p. 312. For Genus *Caccabis* substitute

Alectoris Kaup, Skiz. Entw.-Geschichte u. Nat. Syst. Eur. Thierw. p. 180, 1829. Type by monotypy *Perdix petrosa* Gmel. = *P. barbara* Bonn. (*cf.* Hartert, Nov. Zool. xxiv. p. 275).

5. The following specific alterations were also agreed to :—

p. 44. For *Motacilla feldegg* read *M. feldegg* as printed in the original description.

p. 74. *Cettia cetti*, references to be altered as follows :—

Cettia Bonaparte, Icon. Faun. Ital. i. 1834, text to pl. 29.

Sylvia cetti Temminck, Man. Orn. 2nd ed., Oct. 1820, p. 194.

p. 101. *Enanthe stapazina* and *E. occidentalis*. These birds, the Black-throated and Black-eared Wheatears, appear to be undoubtedly phases of one specific form and must be called :

***Enanthe hispanica*.**

Motacilla hispanica Linnæus, Syst. Nat. 10th ed. 1758, p. 186 : Gibraltar.

The name of the eastern race, *Enanthe amphileuca* of the B. O. U. List, must be changed to :

***Enanthe hispanica melanoleuca*.**

Muscicapa melanoleuca Gûldenstädt, Nov. Com. Petrop. xix. 1775, p. 468, pl. 15 : Georgia, Caucasus (cf. Practical Handbook Brit. Bds. p. 435).

p. 110. *Muscicapa parva*. Original reference should be *Muscicapa parva* Bechstein, Getreue Abbild. part 2, p. 26, 1793.

p. 147. For *Hierofalco gyrfalco* substitute

***Hierofalco rusticolus*.**

Falco rusticolus Linnæus, Syst. Nat. 10th ed. 1758, p. 88 : Sweden.

This name has three pages priority over *F. gyrfalco*.

6. Suggested alterations and amendments not accepted:—

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52. Genus *Regulus* v. *Reu* or *Regillus* (cf. Mathews & Iredale, Austr. Av. Rec. iii. p. 119; Auk, 1920, p. 448; and Practical Handbook, p. 250).
Regulus confirmed.
93. Genus *Erithacus* v. *Dandalus* (cf. B. O. U. List, p. 366, and Practical Handbook, p. 481).
Erithacus confirmed.
95. Genus *Luscinia* v. *Daulias* Zimmermann (cf. Mathews, Austr. Av. Rec. iii. p. 117).
Zimmermann's name not accepted.
Luscinia confirmed.
111. *Hirundo* v. *Chelidon* and *Delichon* v. *Hirundo*.
Hirundo and *Delichon* now accepted by Hartert (vide Practical Handbook, p. 502).
Hirundo and *Delichon* confirmed.
200. *Plegadis* v. *Egatheus* of Hand-list.
Plegadis is retained (cf. Auk, 1913, p. 92; Hartert, V. p. F. p. 1220).
Plegadis confirmed.
205. *Chlamydotis* v. *Houbara* of Hand-list.
Chlamydotis confirmed.
294. *Colymbus* v. *Podiceps* for the Grebes (cf. B. O. U. List, p. 390; Auk, 1920, p. 445).
Note on the type of *Colymbus*:—

The genus *Colymbus* as used by Linnæus in 1758 contained four species: *arcticus* (Black-throated Diver), *cristatus* (Great Crested Grebe), *auritus* (Slavonian Grebe), and *podiceps* (American Pied-billed Grebe). Latham introduced *Podiceps* for the Grebes and retained *Colymbus* for the Divers, and his usage was followed by practically every other author until the year 1882, when Dr. Stejneger proposed to use *Colymbus* for the Grebes.

George Gray was the first author who recognized the necessity of fixing a type-species to each genus, and in the first two lists published in 1840 and 1841, working with the 12th edition of Linnæus, he fixed the type of *Colymbus* as *C. glacialis*. Later in 1855 (Cat. Gen. Subgen. Bds. p. 125), finding that *C. glacialis* did not occur in the earlier editions of Linnæus, he substituted *arcticus*, which name is found in all the early editions of Linnæus's Syst. Nat. from 1735 to 1758; but as he had already in his previous lists suggested *glacialis* for *Colymbus* of the 12th edition, he wrote: "Linn. 1735 nec 1766." Gray's intention was perfectly obvious and reasonable, and we fear, if his action in this case is rejected (as it is in the Supplement just published in the 'Auk,' 1920, p. 445), it will open a loophole for upsetting a large number of other type-designations by the same author.

The A. O. U. Check-list Committee have now abandoned the ground they took up in the earlier editions of the Check-list, and merely quote "type by subsequent designation of the A. O. U. Check-list Committee," although that action has been shown (B. O. U. List Brit. Birds, p. 399) to be based on a fallacy.

Podiceps is confirmed for the Grebes.

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133. *Nyctala funerea* v. *tengmalmi* (vide B. O. U. List, p. 378; also Auk, 1919, p. 447).
N. funerea accepted and confirmed.
145. *Milvus migrans* v. *M. korschun*.
M. migrans accepted and confirmed.
150. *Falco usalon* v. *F. regulus*.
F. usalon accepted.
159. *Anser erythropus* v. *A. finmarchicus*.
A. erythropus accepted (vide Lönnberg, Ibis, 1913, p. 400, and Hartert, V. p. F. p. 1282).

XVIII.—*Obituary.*

ROBERT BIRKBECK.

WE cannot pass over in silence the death of one of the original members of the Union, although he severed his connection with it so long ago as 1868.

Robert Birkbeck, who died on 18 November last at the age of 83 at his house, Kinloch Hourn, in Inverness-shire, was born at Keswick in 1836, and was the fourth son of William Birkbeck, of Keswick Old Hall, Norfolk. He married in 1857 Mary Harriet, eldest daughter of the late Sir John William Lubbock, Bt., and was therefore a brother-in-law of the late Lord Avebury. He was also an uncle by marriage of Mr. J. H. Gurney. He took much interest in ornithology and was among the first to join the ranks of the Union when it was projected in 1858, though he resigned ten years later. He lived most of his life on his estate on the west coast of Scotland, and devoted himself to horticulture and the study and protection of some of our rarer birds.

A portrait of him as he appeared in his young days, with a short notice, will be found in the Jubilee Supplement volume of 'The Ibis' for 1908.

CHARLES EDWARD FAGAN, C.B.E., I.S.O.

Although not a member of the Union, Mr. Fagan, Secretary to the Natural History Museum, South Kensington, whose death took place at his residence in West Kensington on the 30th of January, was well known to a large number of our members. In 1873, at the age of eighteen, Mr. Fagan entered the British Museum, Bloomsbury, as a second-class assistant, and on the opening of the Natural History Museum at South Kensington he was transferred to the office of Professor (afterwards Sir William) Flower, the newly-appointed director. In 1889 he became assistant secretary, and when Sir Sidney Harmer was appointed director in 1919 he was made secretary.

Mr. Fagan made no claims to being an ornithologist, but he had a great interest in natural history, and was always ready to do all in his power to advance its study. He was specially interested in the preservation of the native fauna, not only in this country but in the Colonies, and acted as honorary treasurer to the Society for the Promotion of Nature Reserves and was the British representative on the International Committee for the Protection of Nature in 1913.

When the International Ornithological Congress met in this country in 1905, Mr. Fagan acted as honorary treasurer, and he undertook the same office for the British Ornithologists' Union Expedition to Dutch New Guinea. This expedition was instituted by Mr. Ogilvie-Grant at the Jubilee Meeting of the Union in 1908, and Mr. Fagan was personally responsible for much of the preliminary work in connection with its organization.

Mr. Fagan took a deep interest in the Bird Room and the development of the ornithological collections of our National Museum, so much so that the officers in charge of that department have always been indebted to him for assistance in many ways and on many occasions. Indeed, one is justified in saying that had it not been for Mr. Fagan's personal efforts and success in enlisting the sympathy and help of those who were in a position to further his many ideas for the development and expansion of the collections, the Museum would not now contain the magnificent series of the birds of the world which are now represented in its cabinets.

HENRY JONES.

We learn with deep regret of the death of Major Henry Jones, which occurred at his home at Wimbledon Park on the 5th of February, at the age of 83 years—he was buried at East Wickham. He was born on the 9th of February, 1838, near Folkestone, and was educated at Shrewsbury House School, Shooter's Hill. He joined the service, as an ensign, on the 25th of September, 1860, in the 94th Foot

Regt., serving under Lord Napier; on the 1st of August, 1862, he transferred to the 62nd Foot Regt., being made Lieutenant on the 24th of November, 1863, and promoted to Captain on the 7th of February, 1876. He left the service in 1881, after serving over fifteen years in India, and lived on retirement at East Wickham House, Welling, Kent, moving to Wimbledon Park in 1916.

For many years he came to the Bird Room at the Natural History Museum and made most careful and excellent drawings and sketches of birds with their natural surroundings.

He worked through every species of the Game Birds and the Ducks, and at the time of his death was engaged on the Corvidæ. We hear that his drawings have all been left to the Zoological Society. Major Jones was elected a member of the Union in 1900.

XIX.—*Notices of recent Ornithological Publications.*

Bartsch on the Birds of the Tortugas.

[The Bird-rookeries of the Tortugas. By Paul Bartsch. Smithsonian Report for 1917, pp. 469-500, 38 pls. Published 1919.]

The Tortugas are the last of the long line of coral reefs and islands which string out in a westerly direction from the southern extremity of Florida into the Gulf of Mexico, and have long been renowned for the numbers of sea-birds visiting and breeding on them. The first ornithologist who visited them was J. J. Audubon in 1832. He has given us a most vivid account of his observations and experiences in his *Ornithological Biography*, portions of which are reprinted in the present paper. On one of the islands, Loggerhead Key, is the Marine Biological Laboratory of the Carnegie Institution, at which most of the recent work on birds, especially that of Messrs. Watson and Lashley (*vide Ibis*, 1916, p. 191), has been conducted. The most interesting island of the group is Bird Key, where, out of

32,800 birds listed in a census made in 1916, some 31,200 have their homes and breeding-grounds.

Far the most numerous in individuals are the Sooty Tern (*Sterna fuscata*) and the Noddy (*Anous stolidus*); others of less importance as regards numbers are the Least Tern (*Sterna a. antillarum*), the Roseate (*S. dougalli*), the Man-o'-War Bird (*Fregata magnificens rothschildi*), and the Boobies (*Sula leucogastris* and *S. sula*), but the last three do not nest.

Good accounts of all these species are given by Dr. Bartsch in the present paper, which is illustrated by a large number of photographs. There is also an interesting list of all the birds which have been recorded from the islands, as well as of the land-birds which have been observed there on different occasions on migration.

Chapman on variation in Ostinops decumanus.

[Unusual types of apparent geographic variation in colour and of individual variation in size exhibited by *Ostinops decumanus*. By Frank M. Chapman. Proc. Biol. Soc. Washington, vol. xxxiii. 1920, pp. 25-32.]

Mr. Chapman has recently examined a large series of examples of *Ostinops decumanus*, chiefly from southern Peru and Bolivia, and also from Matto Grosso in south-west Brazil, and he finds among these birds, both male and female, a remarkable phenomenon of a varying number of feathers of the body and wing-coverts being wholly or in part yellow or more rarely white. Such a variation, if found in a single individual, would certainly be considered as pathological albinism or xanthochroism. But this curious variation is found to a variable extent in so large a proportion of the birds examined that it must be considered a diagnostic character, and to draw attention to it Mr. Chapman proposes to distinguish this form as a distinct subspecies, *Ostinops decumanus maculosus*. In birds from north of the Amazon valley this variation does not occur.

In regard to size, Mr. Chapman finds a very remarkable variation among the males only—both those from the northern and southern parts of South America.

The wings of seven birds from Matto Grosso vary from 205 to 239 mm., while in a series of five males from Colombia the variation ranges from 228 to 249 mm., and the shape of the wing as shown in a text-figure is very different in the two extreme cases. Mr. Chapman believes that the short-winged individuals are young birds in their first winter, and that as they grow older the wings, as well as the tail and culmen, increase in length. *Ostinops decumanus* is certainly a species of considerable interest, and deserves further study.

Christiani on a new Rock-Pipit.

[Den vestnorske Skaerpiber (*Anthus petrosus schiøleri*, subsp. nov.). Af A. Christiani. Dansk. Ornith. Forenings Tidsskrift, 1920, pp. 157-162.]

Mr. Christiani here describes a new subspecies of Rock-Pipit, *Anthus petrosus schiøleri*, from western Norway. The types are from Florø Island near Trondhjem, and Skaer-gaaden near Bergen. The chief distinguishing character is apparently a slight colour-difference in the vinous of the chest. In a further note on the Faroe Island form, *A. p. kleinschmidti*, described by Dr. Hartert, Mr. Christiani states that the first observer who pointed out its peculiarities was J. C. H. Fischer (Journ. Ornith. 1861, p. 432), and not Pastor Kleinschmidt as stated by Hartert.

Coward on British Birds.

[The Birds of the British Isles and their Eggs. By T. A. Coward. Second Series. Pp. vii + 576; 213 col. pls.; 69 photographic illustr. London & New York (Warne), 1920.]

The second and concluding portion of this little book, which is one of Warne's 'Wayside and Woodland' series, is hardly up to the level of the first volume (*cf.* Ibis, April 1920). This is, however, chiefly due to the nature of the subject-matter, and not to any lack of skill in the author. The families treated are those from the Anatidæ to the Tetraonidæ, and it is easy to understand that few persons can visit the breeding-haunts of every species, or write with

that full knowledge of the habits which was so conspicuous in Mr. Coward's treatment of such groups as the Warblers. But the coloration of the eggs leaves much to be desired, and in the case of certain of the Ducks is absolutely misleading: for instance, the Gadwall's egg is cream-coloured, not green. The reproductions of Lord Lilford's plates are wonderful for a book of this price; the black plates are good, but somewhat ordinary, while only the publisher can tell whether they are necessary to the sale of the volumes. We should have omitted them and used them elsewhere.

Howard on Territory in Bird Life.

[Territory in Bird Life. By H. Eliot Howard. Pp. xiv+308; 11 photogravures by Lodge and Grönvold. London (John Murray), 1920. 8vo. 21s. net.]

As a result of long-continued observation in the field on the breeding-habits of British Warblers, Mr. H. Eliot Howard has gradually come to realize the immense importance of the possession of territory to the male, and its influence on his life and actions. In the present attractive and thoughtful little work he has extended his studies to other families, and finds that the same general principles hold good.

It is obvious that no species can breed unless it has undisputed possession of a nesting-site of some kind, however restricted, and to this extent every bird requires what we may agree to call territory. But among the Warblers the term includes, not merely the nesting-place, but a more or less extensive reserve, which serves as a station from which the song is uttered to attract a mate, and the hunting-ground or source of food-supply, the limits of which are rarely transgressed by the parents during the whole period of reproduction. On the other hand, among the Auks we find the Guillemot occupying, to use Mr. Howard's words, "a few square feet of rock only" for breeding-purposes. On the pinnacles at the Farne Islands it would be more correct to say that the breeding space

covers a few square inches only, so that the isolation of the breeding pair is more theoretical than practical.

Mr. Howard ascribes the restricted nature of the Guillemot's territory to the fact that the species, as a whole, would suffer if each male resisted intrusion on its breeding-ledge, owing to the scanty number of available sites, while, on the other hand, the food-supply is practically unlimited. The explanation seems adequate in this case, but is less convincing when we come to consider the difference between the breeding-habits of the Raven and Rook. The former requires not merely a home, but also an estate surrounding it, on which he brooks no rival; the latter is content to live in a bird-town in the tree-top, from where he sallies forth with his companions to seek his living on communal ground. Here shortage of nesting-sites cannot be urged as the reason for such close association, nor is there any advantage gained with regard to food-supplies, so mutual protection is assigned as the necessary condition of the Rook's existence. Now it is quite true that many cases are on record of rookeries being raided by Carrion Crows, but no serious resistance seems ever to be made by the Rooks, and no combined action taken by the members of the colony in opposition to the raiders. This is the more remarkable, when it is remembered that such species as the Common and Arctic Terns, though far weaker as individuals, when acting in concert, can drive off not only the Hooded or Carrion Crow, but even the Marsh-Harrier. Another instance where communal breeding is practically useless for purposes of defence, is that of the Cormorant. The parent birds of one nest will view with absolute indifference the robbery of another nest only a few feet away by Crow or Gull. In these cases the difference in the territorial idea is much more than merely of degree. One might almost say that among birds, even in the same families, there are individualists and socialists,—and we may take the Rook, the Martins, the Terns, and the Guillemot, as examples of the latter class; while the Warblers, the Falcons, the Pipits,

Shrikes, and many other families may be quoted as belonging to the former. Some of the communal breeders have also adopted a system of communal defence (more especially the Terns), but with others nothing of the kind has yet been evolved.

We think a truer idea of Territory in Bird Life would be gained by eliminating the actual nesting-site, which is, of course, a necessity in every case, and restricting the use of the word to the area embraced by the activities of the parents. We shall then find that in some groups all other individuals of the same species are rigidly driven off the whole territory, in others the idea is only present in a rudimentary form, and in a third class the association is of the closest kind and individual territory is unknown.

There is also a wide field for research, untouched in the present work, on the occasional unresented presence of a third individual together with a pair in the case of a normally monogamous species. Probably this has been noted most frequently in the case of the Long-tailed Tit, but there are recorded instances in some twelve or fourteen other species at least. We are grateful to Mr. Howard for his beautifully illustrated and thoughtful study on an aspect of bird-life, which by his researches he has undoubtedly done much to elucidate.—F. C. R. JOURDAIN.

Hellmayr's recent papers on Neotropical Birds.

[Ein Beitrag zur Ornithologie von Südost-Peru. Von C. E. Hellmayr. Arch. Naturgesch. Jahrg. 85, Abt. A, 1920, pp. 1-131.]

[Miscellanea Ornithologica, V. Id. Verhandl. Orn. Ges. Bayern, xiv. 1920, pp. 281-287.]

The first of these papers contains an account of the more interesting forms contained in a collection made by the brothers H. and C. Watkins in the Department of Puno in south-eastern Peru, near the Bolivian border. These collections reached Europe before the outbreak of the war, and are now preserved, partly in the Munich Museum, partly in the private collection of Count Josef Seilern.

They contained about 12,000 skins, representing 250 species. Some of the new forms have been already described, while four additional ones are here introduced for the first time, viz.:—*Cyanerpes carulea chocoana* from Colombia, *Rhamphocelus carbo centralis* from Brazil, *Spizitornis parulus patagonicus* from Argentina, and *Lepidocolaptes lacrymiger carabayæ* from S.E. Peru. Very valuable comments on nomenclature and geographical distribution, together with revisions of various groups of subspecific forms, make up the rest of the paper, which is one of the most important contributions to our knowledge of the avifauna of the eastern slopes of the Peruvian Andes which has appeared for some time.

The second paper, which also deals solely with neotropical forms, contains revisions of nomenclature and synonymy. A note on the first record of *Helminthophila leucobronchialis* in South America is of considerable interest, as this rare little Warbler is believed by Mr. Faxon and other North American naturalists to be a natural hybrid between *H. pinus* and *H. chrysoptera*. The South American example was obtained near Merida in Venezuela, and is now in the Tring Museum.

Laubmann on Lesson's Types.

[Kritische Untersuchungen über die Genotypfixierungen in Lesson's 'Manuel d'Ornithologie,' 1828. Von Dr. A. Laubmann. Arch. Naturgesch. Jahrg. 85, Abt. A, 1920, pp. 137-168.]

In this laborious but useful work Dr. Laubmann has carefully reviewed all the genera in Lesson's 'Manuel d'Ornithologie,' and has shown that in many cases Lesson, quite in accordance with the modern rules of Zoological nomenclature, fixed the types of a good many genera where the fixation has generally been attributed to Gray, whose work was published later. This paper should be carefully consulted by all who are interested in nomenclatural work.

Lavauden on Tunisian Birds.

[La chasse et la faune cynégétique en Tunisie. Par Louis Lavauden. Pp. 1-40. Tunis (Imprim. centr.), 1920. 8vo.]

[Contribution à l'étude des formes du Hibou Ascalaphe dans l'Afrique du Nord. Id. Rev. Franç. d'Orn. 1920, nos. 132-3, pp. 1-8 (separately paged).]

In the first of these pamphlets M. Lavauden, who is an Inspector of Forests in the Regency of Tunis, gives us a useful review of the Mammalian and Avian fauna of Tunisia, chiefly from the sportsman's point of view. The birds of Tunisia have been dealt with by Mr. Whitaker in his well-known work; but no volume in French has yet been published, and we hope that M. Lavauden will find time before he leaves the country to prepare one. We understand that he has already completed a work on the Mammals, which unfortunately is yet awaiting a publisher. The most interesting bird likely to be noticed by the casual visitor to Tunisia is undoubtedly the Flamingo, which is always to be seen on the great lake which separates Tunis from the sea, though it is not known to breed there. M. Lavauden, however, has reason to believe that it nests in a lake in the southern part of the Regency between Sousse and Kairouan.

The pamphlet also contains the official regulations in regard to the importation of arms, and the closed and open seasons for shooting. We are glad to notice that the Flamingo and some of the other rarer birds and mammals are strictly preserved.

In the second paper M. Lavauden discusses the Eagle-Owls of Tunisia. He points out that there is at present no certain evidence of the occurrence in Tunisia of *Bubo bubo* in any of its immediate subspecies, though it is said to have occurred in Algeria. On the other hand, there are two forms of the Egyptian Eagle-Owl, *Bubo ascalaphus* and *B. a. desertorum*. These two forms appear to be quite distinct: the former occurring, though rarely, in the north of Algeria and Tunisia; the latter, which has

been met with far more frequently, inhabiting southern and drier parts of the country.

McGregor on Philippine Birds.

[Some features of the Philippine Ornis, with notes on the vegetation in relation to the Avifauna. By Richard C. McGregor. *Philippine Journ. Sci.* vol. xvi. 1920, pp. 361-437, map and 34 pls.]

For a good many years past Mr. McGregor has been stationed at Manila, where he occupies the position of Ornithologist in the Bureau of Science. He has had many opportunities of adding to our knowledge of the birds of the Philippine Islands, and in the present essay he deals with them chiefly from the ecological and geographical aspect. After noticing the great scarcity of sea-birds in the Philippine waters and the comparative absence of native birds about the town of Manila, where the two commonest species are the European Tree-Sparrow and Chinese Crested Minah (*Ethiopsar cristatellus*), he points out how the whole aspect of the low country has been changed by the destruction of the virgin forest which formerly covered it, and how most of the indigenous endemic birds are found in the forest-regions that remain, chiefly in the mountainous areas.

He then discusses the various types of forest, from the mangroves of the tide-lands to the pine and the mossy types which cover the higher parts of the islands at from 2000 to 4000 feet, and comments on the birds which characterize each type of forest.

Most of the more interesting Philippine birds inhabit the Dipterocarp type of forest, so-called from its most conspicuous and valuable constituent "*Dipterocarpus*." The forests are best developed on the well-watered plains or the lower slopes of the larger mountains, generally below 5000 feet.

A further discussion deals with the local distribution of the endemic species among the various islands of the Archipelago. Most of the species are confined to single islands or groups of islands, and are represented by allied

forms in other groups of islands ; but this is by no means always the case, and there are many instances of comparatively closely allied species being found together even in the same patch of forest. Finally, a revised list of the faunal regions into which the islands can be most conveniently arranged, is given.

A map and a number of photographs of characteristic scenery in the islands agreeably assist one to follow the facts and arguments put forward in the paper, which is one of very considerable importance, and should be studied by all interested in the problems of the distribution of birds in tropical lands.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. viii. pt. 5, pp. 241-316, pls. 395-399. London (Witherby), December 15th, 1920.]

This part, which concludes the volume, gives us an unusually simple task, as it contains only various Pachycephaline forms now separated in the genera given below.

First, we have the conclusion of *Lewinornis rufiventris*, to which many a generic name was given of old, not without reason, as it shows a certain affinity to *Colluricincla*. Only one species is allowed, the others being reduced to nine subspecies, of which *dulcior* of North Queensland, *gawlerensis* of South Australia, and *waddelli* from the same country are new. *Gilbertornis* has two species—*rufogularis*, which is said to have a peculiar note, and *inornatus*, which is proved to be the proper appellation of *gilbertii*, with its three subspecies. The robust *Alisterornis lanioides* was considered worthy of specific rank, even by Gould ; its range lies to the northward and it has a curious habit of feeding on small crabs. There are four subspecies. *Timixos olivaceus*, with one less, is followed by *Mattingleya griseiceps*, which is the *Eopsaltria inornata* of Ramsay and almost certainly *Pachycephala peninsulae* of Hartert. *Muscitrea simplex*, which is said to be synonymous with *Tephrodornis grisola* of Blyth, has two subspecies, which are certainly different from the extralimital form.

The only new genus in this part of the work is *Peneanthe*, where the tail resembles that of a Wheatear. The species *leucura* has six or seven subspecies, according to whether we include Salvadori's *pulverulenta* of New Guinea or not. *Quoyornis georgianus* has three races, *Eopsaltria australis* six. The latter, first figured by White in 1790, was given no less than three different names by Latham, and has had other synonyms, as will be seen from the text. A second species, *E. griseogularis*, has four subspecies, of which *wongani* and *quoyi*, both from Western Australia, are new.

Attention should be drawn to two pages of corrections of the Check-List printed in this part.

Mathews on the dates of ornithological publications.

[Dates of ornithological works. By Gregory M. Mathews. Austral Av. Record, iv. 1920, pp. 1-27.]

In Appendix B of the last part of volume vii. of 'The Birds of Australia' Mr. Mathews attempted to provide a list of the exact dates of publication of the ornithological works quoted by him. Though a good many investigations into this difficult bibliographical question have been made, especially by Mr. Sherborn and Mr. Waterhouse, no one has collected their results into one place easily accessible to the working ornithologist, and now Mr. Mathews has reprinted with additions and corrections this valuable piece of research in a more accessible form.

The publications dealt with are primarily those in which the Australian birds are described; but the list will undoubtedly be of the greatest use and service to all systematic ornithologists, and we would tender our best thanks to Mr. Mathews for this excellent and laborious piece of work.

Murphy on the Sea-birds of Peru.

[The sea-coast and islands of Peru. Pts. I., II., & III. By Robert Cushman Murphy. Brooklyn Museum Quarterly, vii. 1920, pp. 69-95, 165-187, 239-272.]

In these three articles, and there appear to be more to

follow, Mr. Murphy, Curator of the Brooklyn Museum in New York, gives us an account of his recent visit to Peru and its bird-islands, which he terms the Peruvian Littoral Expedition, and which he was enabled to undertake through the generous bequest of the late Col. R. B. Woodward, a benefactor of the Brooklyn Museum. The chief objects of the expedition were observation and research, the collecting of specimens, and the obtaining of motion-picture records of the life on the coast and of the Peruvian guano industry.

As is well known, owing to the cold Humboldt current which, partly coming up from the southern latitudes, and partly owing to the welling-up of colder water from below the surface, due to the trade winds blowing south of the equator in a north-westerly direction, the coasts of Peru have a fauna which is quite unlike that of ordinary tropical coasts, and instead of Frigate-birds and Man-o'-War birds, the characteristic birds are Penguins, Diving Petrels (*Pelecanoides*), and *Larus dominicanus*. In addition to this, owing to the fact that the great height of the Andes, extending like a gigantic cliff along the whole western coast of South America, drain the trade winds blowing across the continent from the Atlantic of all their moisture, the coastlands of Peru and the northern part of Chile are almost entirely rainless; the result is that the guano deposited on the islands off the coasts by the innumerable sea-birds accumulates in great quantities, and has been a source of wealth to Peru for the last hundred years or so.

In past times the guano deposits have been worked in a most reckless manner and were rapidly becoming exhausted, while no efforts were made to conserve the bird-life to which this valuable manuring agent owed its origin.

Of recent years, however, a new regime has been inaugurated, and the whole industry is under the control of the government and of a company, the "Compañía Administradora del Guano," and very careful steps are taken to work the deposits without unduly disturbing the birds.

It is interesting to observe that on the south-west coasts of Africa, where conditions are very similar, the same course has been adopted, though there the control of the islands is directly under the government of the Union of South Africa.

The three most important guano-producing birds are the Alcatraz (*Pelecanus thagus*), the Piquero (*Sula variegata*), and the Camanay (*Sula nebouxi*). Of these, and of the methods and operations of obtaining the guano, Mr. Murphy has given a most lucid account illustrated by numerous and beautifully reproduced photographs, and the articles are well worthy of perusal by all those interested in the industrial application of ornithology.

To his two predecessors in the investigation of the guano islands, Dr. H. O. Forbes and Mr. R. E. Coker, of the United States Bureau of Fisheries, Mr. Murphy pays a well-deserved tribute. An interesting discovery is that these seas are the winter home of the Northern or Red-necked Phalarope (*Phalaropus lobatus*); its winter quarters in the New World had been hitherto unknown.

Peters on a new Jay.

[A new Jay from Alberta. By James Lee Peters. Proc. New England Zool. Cl. vii. 1920, pp. 51-52.]

Mr. Peters describes *Perisoreus canadensis albescens* as a distinct race from Red Deer, Alberta, Canada. It is distinguished from all the other races of the Canada Jay by its much paler coloration. The type is in the Museum of Comparative Zoölogy at Cambridge, Mass.

Ridgway on new Genera of Birds.

[Diagnoses of some new Genera of Birds. By Robert Ridgway. Smithsonian Miscel. Coll. Washington, vol. lxxii, no. 4, 1920, pp. 1-4.]

The following new Genera of Hawks and Rails are proposed, no doubt in anticipation of a forthcoming volume of the 'Birds of North and Middle America':—*Oroaëtus* for type *Spizaëtus isidori* (Vieill.); *Phæoaëtus* for type

Spizaetus limnaetus (Horsf.) (*Limnaetus* Vigors, a synonym, is antedated by *Limnæetus* Bowdich, the latter a synonym of *Buteo*) ; *Morphnarchus* for type *Leucopternis princeps* Scl. ; *Percnotherax* for type *Rupornis leucorrhous* (Q. & G.) ; *Hapalocrex* for type *Rallus flaviventris* Bodd. ; *Limnocrex* for type *Porzana cinereiceps* Lawrence ; *Thryocrex* for type *Corethrura rubra* Scl. & Salv.

Riley on new Malayan Birds.

[Four new Birds from the Philippines and Greater Sunda Islands. By J. H. Riley. Proc. Biol. Soc. Washington, vol. xxxiii. 1920, pp. 55-58.]

Mr. Riley describes as new from Mr. Raven's collection the following :—*Anthreptes malacensis paraguæ* from Palawan, *A. m. bornensis* from Borneo, *Enodes erythrophrys centralis* from Celebes, and *Munia punctulata particeps* also from Celebes.

Robinson and Kloss on the names of the Jungle-Fowls.

[On the proper name of the Red Jungle-Fowl from Peninsular India. By H. C. Robinson and C. Boden Kloss. Records Indian Mus. xix. pt. 1, 1920, pp. 13-15.]

The nomenclature of the Indian Red Jungle-Fowl has been discussed lately by several writers. Messrs. Robinson and Kloss consider that the correct specific name is *Gallus ferrugineus* (Gmel.), founded on Sonnerat's bird, probably from the Philippine Islands, as he visited no area in India proper where he could have procured the Red Jungle-Fowl, and that the typical subspecies *G. f. ferrugineus* is the Malayan bird also occurring in Burma and Hainan. To the Javan race, which is distinguished by the dark colour of the hackles, the authors assign the name *G. f. bankiva* Temm., while the bird of India proper has to receive a new name. For this form *Gallus ferrugineus murghi* is proposed, the subspecific name being apparently derived from the common Hindustani word for a chicken, familiar to every Anglo-Indian.

Skovgaard on Danish Birds.

[Den Sorte Stork, særlig i Danmark. i tekst og billeder af P. Skovgaard. Pp. 1-56; many photographs. Viborg (Backhausens), 1920. 8vo.]

[Danske-Fugle: Organ for Dansk Ornithologisk Central ved P. Skovgaard. Viborg. Aarg. 1, no. 1, 1920.]

The first of these publications contains an account of the life-history of the Black Stork (*Ciconia nigra*) in Denmark. There is a map showing the breeding-stations, from which it appears that it is most abundant in the eastern half of Jutland, less so in the islands, and is hardly found at all in the western half of the peninsula. It arrives at its breeding-places generally in April, though occasionally in March, and leaves as a rule in August or early September. The paper is illustrated with a number of very fine photographs, all taken by the author himself.

The second publication is a new magazine devoted to Danish Birds, though the whole of the articles are apparently from the pen of Mr. Skovgaard. One of these deals with the food of the White Stork as deduced from an examination of the stomach. Another has an account of Mr. Skovgaard's activities in bird-ringing, and there is also a list of a collection of Danish birds belonging to Mr. C. Reimers of Viborg, with a map and some photographs of the rarer species.

We congratulate Mr. Skovgaard on his industry and hope that he will be able to continue his studies, and that his magazine will have a long life.

Stresemann on the races of Long-tailed Tits and Bullfinches.

[Über die Formen der Gruppe *Ægithalos caudatus* und ihre Kreuzungen. Über die europäischen Gimpel (mit einer Kart ihrer Verbreitung). Von Erwin Stresemann. Beiträge zur Zoogeographie der paläarktischen Region. Herausgegeben von der Ornith. Gesellsch. in Bayern. Heft 1, 1919, pp. 1-56.]

In the first of these essays Dr. Stresemann reviews the very variable group of the Long-tailed Tits, among which

he distinguishes fourteen races spread over the Palæarctic Region. He divides these fourteen races into three groups, and he believes that when individuals belonging to different groups extend their range towards one another's territory hybridization occurs, and that such hybrids follow the Mendelian laws. Also that in some cases pure-blooded individuals revert to the more primitive types from which they are sprung, and that a clear distinction should be drawn between them and the hybrids. By means of these hypotheses he endeavours to account for the many varying forms of Long-tailed Tits met with in the Palæarctic Region.

With regard to the Bullfinches the problem appears more simple, but here, too, the explanation is hybridization between two comparatively distinct forms. The larger, *Pyrrhula p. pyrrhula*, of the east and north, and the smaller, *Pyrrhula p. minor* and *P. p. pileata*, of the west, have spread out since the Ice Age and met in southern Germany, where a mixed or hybrid form, known as *P. p. germanica*, has established itself. Such in brief appears to be the views of our author on these difficult and complicated questions.

Bird-Lore.

[Bird-Lore: A bi-monthly Magazine devoted to the Study and Protection of Birds. Vols. xxi. & xxii. for 1919 & 1920.]

The two volumes of 'Bird-Lore' under notice contain a number of articles of considerable interest, especially to the bird-lover in America, to whom they are specially addressed. We must confine ourselves to mentioning some of those of more general interest. The Editor, Mr. Frank Chapman, during the last part of the war was a travelling commissioner for the American Red Cross and, in that capacity, made a rapid journey through South America, visiting Peru, Chile, and the Argentjne. His impressions on the bird-life of those countries will be found in a series of vivid articles illustrated with photographs and drawings. Perhaps

one of the most remarkable is that of a Giant Humming-bird (*Patagona gigas*) capturing on the wing a common small species (*Eustephanus galeritus*), a sight which he witnessed in the foot-hills of the Andes, near Santiago. Other articles by the Editor deal with a visit to Selborne, in England, and with the life of the late William Brewster, with whom he was connected by a special tie of affection.

One of the great features of 'Bird-Lore' is the Christmas Bird census. All readers of the Magazine are invited to send to the editor a list of all the species of birds they have been able to identify during a walk or excursion on or about Christmas day. Many returns are sent in from all parts of the United States. In 1919-20 the greatest number of species observed in the northern and eastern Atlantic States were 43, while at Santa Barbara, on the Californian coast, as many as 109 were tabulated. The present writer, who was in America during Christmas 1919, with the help of some kind and sharp-eyed hosts, was able to make a return of 21 species observed on the coast of Long Island.

Other interesting features of 'Bird-Lore' are the seasonal reports from all parts of the States in each number, and the articles on the plumages and migrations of American birds. These last are accompanied by coloured plates in each number. It is a remarkable fact that the European Starling, which is dealt with on p. 213 of volume xxii., was introduced into the United States about 1890, when a number were liberated in New York City, and it has now spread far and wide from Maine to Ohio and Alabama; in some places it has become enormously abundant. We fear it may prove to be as great a nuisance as the Sparrow.

A large part of each number of the Magazine is devoted to the interests of the Audubon Societies, which have been started in every State of the Union for the protection and conservation of bird and animal life, and which are guided and controlled by the National Association of the Audubon Societies in New York.

The Condor.

[The Condor: A Magazine of Western Ornithology. Vols. xxi. & xxii. for 1919 & 1920.]

[Second ten-year Index to the 'Condor.' Vols. xi.-xx., 1909-1918. By J. R. Pemberton. Hollywood, California, 1919.]

Readers of the 'Condor' and Members of Cooper Ornithological Club ought to be very grateful to Mr. Pemberton for his most carefully constructed and ingenious Index to the ten volumes of the 'Condor,' from 1909 to 1918. The preparation of it occupied eighteen months of his time, but the result appears to be extremely satisfactory, and all the information contained in the volumes can be referred to at once, without any trouble.

The longest article contained in the two volumes of the 'Condor' under review is that of Mrs. Merriam Bailey on her wanderings in the Dakota Lake region, in which she recounts in a charming style her experiences and observations on the birds of the western prairie region. A new feature of the 'Condor' is a series of autobiographies, the longest and most important of which is that of Mr. H. W. Henshaw, until recently the Chief of the Biological Survey at Washington. In his early days, in the seventies and eighties of the last century, Mr. Henshaw was attached to the United States Geological and Geographical Survey and travelled extensively all over the Western States. It was during these years that he amassed the large collection of American birds which subsequently, through the generosity of the late Mr. Godman, found a home in our Natural History Museum at South Kensington.

The 1919 volume contains, in addition, a number of articles on the nesting-habits of some of the less well-known western birds, generally illustrated by excellent photographs beautifully reproduced. Such are the accounts of the nesting of Townsend's Solitaire (*Myadestes townsendi*) near the snow-line on Mt. Shasta in northern California by Mr. W. L. Dawson, of the Short-eared Owl in Washington State by Mr. E. H. Kitchin, and of the Red Crossbill in British Columbia by Mr. J. H. Munro ; Mr. G. Willett,

who was for some time stationed on Laysan Island, an outlier of the Hawaiian Islands, gives us some information on the nesting-habits of two rare Petrels—*Pterodroma hypoleuca* and *Oceanodroma tristrami*.

As showing the effects of untimely weather, Mr. E. R. Warren tells us of the effects of a snow-storm at Colorado Springs on the 5th of May, when eight inches of snow covered the ground and did much damage to the migrants, who were then arriving and passing in great numbers.

An obituary notice of a young collector, Mr. M. P. Anderson, who accidentally met with his death in a ship-yard at Oakland, near San Francisco, in February 1919, where he was patriotically doing war-work, is of interest to English naturalists, as it was Mr. Anderson who was chosen some years ago to conduct the collecting expedition of the Duke of Bedford in eastern Asia, and all the birds and mammals then collected are now in the British Museum.

The volume for 1919 contains descriptions of two new races, both from Lower California, by Mr. H. Oberholser—*Junco oreganus pontilis* and *Pipilo fuscus aripolius*.

The 1920 volume contains three articles of general interest by Mr. A. Wetmore. In the first of these he suggests that the plug of feathers nearly always found in the pyloric diverticulum of the stomach of the Grebes acts as a strainer to prevent the passage of larger particles of bone or fish-scales from the stomach into the intestines. In another paper, as the result of observations on a young Great Blue Heron, he believes that the mysterious powder-down patches in the pelvic and pectoral regions of Herons and some other birds are used by the younger birds to oil and dress the contour feathers of the body, especially as the uropygial gland, often used later in life, develops slowly, and does not become functional till subsequently.

Mr. Wetmore's third article deals with the wing-claw in the Swifts. Out of some 48 species belonging to the genera examined, he found the claw absent only in a few species of *Callocalia*, though often minute and rudimentary, and obviously of no functional importance. In the genus

Hemiprocne, usually placed in a distinct family, the wing-claw was not found.

Major Allan Brooks contributes a list of the Wading-birds of southern British Columbia. He believes that no group of birds has been so neglected by western ornithologists, and that there is still much to be learned about them. Mr. Grinnell, the Editor, argues that the life of the sea-birds must be a comparatively safe one, as most of the species only lay one or at the most two eggs, and seldom, if ever, rear a second brood, and if the numbers remain constant it shows that the struggle for existence cannot be very severe.

Mr. Grinnell also describes a new subspecies of Brewer's Blackbird separating those from the Pacific slope from those of eastern North America under the name *Euphagus cyanocephalus minusculus*. Mr. H. Oberholser has a new race of Shore-Lark, *Otocoris alpestris sierræ*, breeding in the Sierra Nevada of California, and Mr. W. P. Taylor a new race of Ptarmigan, *Lagopus leucurus ranierensis*, from Mt. Ranier, in Washington State, where it lives at an elevation of from 6000 to 8000 feet.

Fauna och Flora.

[Fauna och Flora. Populär Tidskrift för Biologi. Utgifven af Einar Lönnberg. Vols. xiv. & xv. for 1919 & 1920, 6 nos. to each vol.]

This excellent magazine, edited by our foreign member, Dr. Lönnberg, deals with zoology and botany in all its aspects, as its title implies; but there is a good proportion of articles on bird-life, chiefly, of course, of local interest, such as rare occurrences and lists of birds of special districts in Sweden. There are also a good many articles of more general interest. Such is the series by Mr. L. G. Andersson containing an account of the travels of Carl Thunberg to South Africa in 1770-1779, an article on bird-psychology by Mr. A. Adlersparre, and several by Dr. Lönnberg himself. Two of these deal with a large collection from Mongolia and north-west China which have recently reached the Stockholm Museum from Mr. P. J. G. Anderson, and another on

the birds of Juan Fernandez and Easter Islands in the south-eastern Pacific. The editor also writes on a Greenfinch $\times$ Goldfinch hybrid, and Mr. K. Kolthoff on another between *Dryobates leuconotus* and *D. major*. Mr. S. Bergmann contributes some notes on the birds of Egypt which he made while on his way to Kamchatka to collect for the Stockholm Museum. There is an obituary notice of Prof. J. A. Palmen (1845-1919), that well-known Finnish ornithologist who first drew up a list of the probable flight-lines of migrating birds, and another of Prof. Tycho Tullberg of Upsala, who died at the age of 77 in 1920. His mother was a great grand-daughter of Linnæus. There are portraits with both these articles. It is interesting to note that a Starling marked in Sweden 8 July, 1915, was captured near Middlesbrough in Yorkshire on the 1st of February, 1918.

Le Gerfaut.

[Le Gerfaut. Revue belge d'Ornithologie. Publiée sous la direction de M. Marcel de Contreras. 5e-9e Année 1919 and 10e Année 1920.]

We have now received the complete set of the 'Gerfaut' for 1919 and 1920, the first two numbers of which were noticed in 'The Ibis' for 1919 (p. 782), and must briefly review the rest of the volumes. M. L. Coopman discusses the Pipits, their migrations from eastern Europe and their occurrence in Belgium, especially that of *Antius cervinus*, and Dr. Mairlot has a good article on the habits of the Yellow Bunting.

In an early number of the magazine, that for May 1912, the first capture of Brünnich's Guillemot in Belgium is recorded. This bird, which was taken at Ostend, turns out to have been a young Razorbill, and the correction will be found on p. 87 of the 1919 volume.

The 1920 volume opens with a portrait and a eulogy of M. Ivan Braconier, a leading Belgian ornithologist, who was unfortunately killed in a motor accident. Another article of interest is a comparison of the birds of Devonshire with those of Belgium by M. Th. Bisschop, who during the German invasion found a home at Torquay. The

absence from Devonshire of the Nightingale, Great Reed-Warbler, Marsh-Warbler, Icterine Warbler, Crested Tit, Shore-Lark, Ortolan Bunting, Tree-Sparrow, and Hazel Hen, all more or less abundant in Belgium, is noted.

M. A. Paque records the occurrence for the first time of *Branta ruficollis* in Belgium. It was taken on the Scheldt, near Antwerp, on 3 December, 1919, and is figured in a coloured plate. Another rare bird found nesting recently in Belgium is the Great Black Woodpecker. No satisfactory record of the occurrence of this bird in the British Islands is known.

There are a number of other useful and interesting contributions dealing with the avifauna of Belgium in its varied aspects, and we hope that the 'Gerfaut' is now firmly established and will continue to prosper.

Irish Naturalist.

[The Irish Naturalist: A monthly Journal on General Irish Natural History. Vols. xxviii. & xxix. for 1919 & 1920.]

There are not very many articles dealing with ornithological topics in the last two volumes of the 'Irish Naturalist.' Perhaps the most interesting and novel is that of Mr. J. P. Burkitt on the so-called "cocks' nests" of the Wren. From careful observations carried out by the author he concludes that the several nests are built by the male alone before the arrival of the female, and that the male during this period of anticipation keeps in touch with all the nests, roosting in them at night. On the arrival of the female, and until the young birds are out of the nest, the male takes little interest in his family. Some of these observations are controverted by Mr. E. P. Butterfield, who is familiar with the Wrens in Yorkshire, where their habits may be somewhat different. In another article Mr. Burkitt deals with the question of the length of the song-period of certain Warblers. He believes that song ceases as soon as incubation begins, and that all the later singing males are mateless.

Mr. Moffat's address to the Dublin Field Naturalists'

Club, printed in the May 1920 number of the journal, deals with colours of birds in relation to their habits. He suggests that the conspicuous white rump and wing-patches of many birds are useful as a signal of alarm and danger.

A new bird to the Irish list is the Carolina Crake or Sora Rail (*Porzana carolina*), an example of which struck the lantern of the lighthouse at Slyne Head, co. Galway, on 11 April, 1920, and is recorded by Prof. C. J. Patten in the June 1920 number.

According to the B. O. U. List there are four British records—one for England, one for Wales, and two for Scotland—of this North American bird.

Scottish Naturalist.

[The Scottish Naturalist: A monthly Magazine devoted to Zoology. 1920; 6 nos.]

The 'Scottish Naturalist,' under the able editorship of our ex-President, continues to flourish so far as its contents are concerned, though somewhat reduced in size, and now appearing only every two months owing to the increased cost of production.

The principal ornithological contributors to the present volume are the Misses Baxter and Rintoul, whose report on Scottish Ornithology for 1917 occupies the whole of the July–August number. This is a most valuable piece of work, most carefully and clearly carried out. The most important ornithological occurrence during the year is the breeding of the Whooper Swan, an event which has taken place during the last two years in west Perthshire. It formerly nested in Orkney, but has not been proved to have bred previously on the mainland. The Misses Baxter and Rintoul have also commenced a series of articles on the breeding species of Scottish Ducks, and have dealt in the present volume with three species—the Gadwall, Wigeon, and Shoveler. They also record the occurrence of the American Wigeon or Baldpate in Fife, while Mr. J. A. Anderson has observed it in Stirlingshire, and with his

notice sends a delicate sketch from life of the Common and American species swimming together in one flock.

Several contributors notice the increase in numbers and in breeding-range of the Great Crested Grebe in Scotland. Mr. Donald Guthrie concludes his notes on the birds of South Uist, and Mr. William Evans gives a list of the breeding-places of the Black-headed Gull in the Forth area, one of which in Midlothian according to evidence in his possession has been occupied since the eighteenth century.

Another contribution from Dr. Eagle Clarke tells us of a surprising account of the attempted nesting of a pair of Bee-eaters in Midlothian. Though occurring not infrequently in the south of England, it has never yet been known to have nested, although it would probably do so if unmolested.

Another new record is that of Catherine and T. E. Hodgkin, who found a nest of the Brambling in Sutherland in May last. The late Mr. E. T. Booth stated that he had found a nest in Perthshire in 1866, but the record has always been looked on as doubtful.

Altogether the volume of the 'Scottish Naturalist' for last year is full of interesting matter, not only in ornithology but in other departments of natural history, and we hope that the appeal of the editor for more subscribers and additional funds to carry on the magazine will meet with the response which it deserves.

List of other Ornithological Publications received.

- BANGS, O. and PENARD, T. E. Notes on American Birds. (Bull. Mus. Comp. Zool. lxiv. pp. 365-397.)
- CHAPMAN, F. M. Descriptions of apparently new Birds from Bolivia, &c. (Amer. Mus. Novitates, no. 2.)
- [COURTOIS, R. P.] Les Oiseaux du Musée de Zi-ka-wei. (Mém. concern. l'hist. nat. de l'Empire Chinois, v. pt. 3, fasc. 1-4.)
- GRINNELL, J. The Californian race of the Brewer Blackbird. The existence of sea-birds a relatively safe one. (Condor, xxii. pp. 101-103, 152-155.)

- GRISCOM, L. Notes on the winter birds of San Antonio, Texas. (Auk, xxxvii. pp. 49-55.)
- GRISCOM, L. and NICHOLS, J. T. A revision of the Seaside Sparrows. (Abstr. Proc. Linn. Soc. New York, no. 32, pp. 18-30.)
- GURNEY, J. H. Early Annals of Ornithology. Pp. 1-240, many illustr. London, 1921. 8vo.
- GURNEY, J. H. Presidential Address, Norfolk and Norwich Nat. Soc., 1920. (Trans. Norf. Norw. Nat. Soc. xi. pp. 1-22.)
- HARTERT, E. Types of Birds in the Tring Museum. (Novit. Zool. xxvi. pp. 123-178; xxvii. pp. 425-505.)
- KURODA, N. Descriptions of three new forms of Birds from Japan and Formosa. (Dobuts. Zasshi, xxxii. pp. 243-248.)
- MATHEWS, G. M. The Birds of Australia. (Vol. xi. pt. 1.)
- OBERHOLSER, H. C. Collection of 44 papers reprinted from various journals.
- SAUNDERS, A. A. A distributional list of the Birds of Montana. (Pacific Coast Avifauna, no. 14.)
- SWARTH, H. S. Birds of the Papago Saguaro National Monument and the neighbouring region, Arizona. Pp. 1-63. Washington (Nat. Park Service), 1920.
- SWARTH, H. S. In Memoriam: Frank Slater Daggett. (Condor, xxii. pp. 129-135.)
- TODD, W. E. C. Descriptions of apparently new South American Birds. (Proc. Biol. Soc. Wash. vol. xxxiii. pp. 71-76.)
- TODD, W. E. C. A revision of the genus *Eupsychortyx*. (Auk, xxxvii. pp. 189-220, pls. v., vi.)
- TOWNSEND, C. W. Supplement to the Birds of Essex County, Massachusetts. (Mem. Nuttall Orn. Club, no. v.)
- WITHERBY, H. F. and others. A Practical Handbook of British Birds. (Pt. x.)
- Audubon Bulletin. (Fall, 1920.)
- Auk. (Vol. xxxviii. no. 1.)
- Australian Avian Record. (Vol. iv. nos. 4, 5.)
- Avicultural Magazine. (Vol. xii. nos. 1, 2.)
- Bird-Lore. (Vol. xxiii. no. 1.)
- Bird Notes. (Vol. iv. nos. 1, 2.)
- British Birds. (Vol. xiv. nos. 8-10.)
- Bull. Essex County Ornith. Club. (1919 & 1920.)
- Canadian Field Naturalist. (Vol. xxxiv. nos. 6, 7.)
- Cassinia (for 1920).
- Condor. (Vol. xxiii. no. 1.)
- Emu. (Vol. xx. no. 3.)
- Fauna och Flora. (1921, pt. 1.)
- Hornero. (Vol. ii. no. 2.)

Irish Naturalist. (Vol. xxx. nos. 1-3.)

Journal of the Bombay Nat. Hist. Soc. (Vol. xxvii. no. 2.)

Journal of the Federated Malay States Museum. (Vol. x. no. 2.)

Journal of the Natural History Society of Siam. (Vol. iii. no. 5.)

Journal für Ornithologie. (Vol. 69, no. 1.)

Oologists' Record. (Vol. i. no. 1.)

Ornithologische Monatsberichte. (Vol. 29, nos. 1/2, 3/4.)

Revue Française d'Ornithologie. (Nos. 140-143.)

Revue d'Histoire naturelle appliquée. L'Oiseau. (Vol. i. no. 12; vol. ii. nos. 1, 2.)

Scottish Naturalist. (1921, nos. 109, 110.)

South African Journal of Natural History. (Vol. ii. no. 2.)

South Australian Ornithologist. (Vol. v. no. 4.)

Tori. (Vol. ii. no. 10.)

Verhandl. Orn. Ges. Bayern. (Vol. xiv. pt. 4.)

XX.—*Letters, Extracts, and Notes.*

The Last Phase of the Subspecies.

SIR,—The interesting letter from Mr. Loomis in the October number of 'The Ibis' will be welcomed by many ornithologists on this side of the Atlantic, and not least by some of those who might be termed "subspecies" men.

It seems to us that up to the present the excuse—in fact, the necessity—for trinomialism lies in the fact that binomial names, and consequent recognition of complete specific distinction, had been conferred on many mere geographical variations. The trinomialist then arrived on the scene, and did much good by reducing such geographical forms to their true position as races, or mere climatic variations, of one species. He also named and continues to name other races, which he considers as distinct as those which have names already.

Now, even those who oppose all trinomialism will agree that, as the species is the only definite minor unit in nature, any system which enables us at a glance to appreciate properly the true specific relationship of a form whose rank as a distinct species had previously been misconceived, would

be welcomed by any ornithologist. It must be remembered that a multitude of races have been named of late years, yet the number of *species* inhabiting, say, a continent like Africa is known now to be considerably less than was supposed ten years ago. The last phase, as Mr. Loomis says, now approaches, for the whole of the geographical variations of many species are now known, and the question arises "of what scientific value are these variations?"

Well, it seems to us personally that trinomialism supplies a handy (not invariably handy) adjective which is internationally understood, and which designates birds from a certain locality in a short and concise way. By the recognition of subspecies we can also map out migration-routes of birds from any given locality, and can note the effect of environment on any given species throughout its range. But beyond this we venture to suggest that the value of subspecies is small, and that their taxonomic value is, in many cases, *nil*.

On the other hand, to those who accept *in toto* the Darwinian theory—or what is commonly accepted as the Darwinian theory—and all that it implies, all subspecies will appear of great value as "incipient species." Now, for our part it has always been a matter of the greatest difficulty to imagine how a geographical form, which, in fact, is already a species, can be termed an "incipient" one: for surely if any given specific group has, we will say, x forms or variations, those x forms have all equal specific entity, differing slightly or superficially by the increment or decrement of some small characteristics. Indeed, if we believe with ultra-Darwinians in the "little by little" theory of evolution, there is no obvious reason why the "typical form" of any specific group should not be just as much an incipient species as its most distant geographical race.

Speaking for ourselves, however, we no longer believe in the "little by little" theory of evolution, nor incidentally in "Natural Selection," except in its purely selective, as opposed to creative, sense—and even in this sense we feel

sceptical on the point as to whether Natural Selection, acting on even discontinuous variations, can have any practical effect on the formation of species, or whether it is not superfluous to invoke the action of Natural Selection at all—nor do we believe in the action of environment in the initiation of new species. The only thing in our opinion which can give rise to a new species is the conjugation of two gametes possessed of some unusual factor or other to form a zygote. We believe that the beginnings of a new species may occur from the union of any two birds anywhere, and is a matter of the chance presence or absence, stimulation or suppression, of factors in the germ-plasm. It must be remembered, however, that over so small a part of the world's history do man's observations extend in point of time, that we cannot definitely state whether or not species are being formed at all at the present day.

There is, moreover, a point in this question of the value of subspecies to which we cannot help thinking ornithologists in general have not hitherto paid sufficient attention. They appear, indeed, to have ignored the very probable fact that there are two main forms of variations—one known as "mutational," in which the variation is discontinuous and dependent on the presence in the organism of definite factors which are resident in the *germ-plasm*, and which are therefore heritable, the other known as a "fluctuational," "environmental," or continuous variation, which is directly due to the action of the environment on the *soma* during the lifetime of the organism, and which effect cannot be passed on to future generations.

We think there can be little doubt that many—indeed, by far the majority—of our present-day subspecific forms belong to this last category, and are mere environmental, unstable, and essentially superficial variations, which would quickly disappear if the organism were transferred from its normal environment to some other of a different nature. Many such environmental subspecies present variations which are

merely quantitative as opposed to qualitative, and it would be interesting in this connection to make a comparative examination of the number of present-day subspecies occurring in a genus where the colours are due to peculiarities of structure in the feathers and the reflection of light upon them—as, for example, in many species of *Cinnyris* or *Nectarinia*,—and, on the other hand, in a genus where the colour is directly due to pigment which can be acted on by humidity, light, etc.

Mutational variations, on the other hand, present characteristics which are directly derived from the action of factors resident in the germ-plasm, which are totally independent in their origin of the action of environment, and which are stable—given favourable conditions. Mutational variations in all probability never intergrade, and they are dependent on isolation whatever form that isolation may take, either geographical or physiological. Natural selection may here play a decisive part in determining their future. The ignoring by ornithologists of these two different forms of variation has led, in our opinion, to the making of subspecies, which, in fact, have very different values and rank.

It appears, therefore, that before we can answer the question propounded by Mr. Loomis “Of what scientific value is a subspecies?”, it behoves us to set our subspecific house in order with a view to gaining a more accurate and definite appreciation of the exact rank of our subspecies, and if necessary to note their quality by some definite nomenclatural method. Finally, we would like to add that if subspecies are sought for and recognized solely with a view to the intensive study of variation, and if their recognition tends to throw any light on the still more elusive question “What is a species and how is it formed?” we are all in favour of their recognition.

P. R. LOWE.

Natural History Museum,
12 February, 1921.

C. MACKWORTH-PRAED.

The Nomenclature of Plumages.

SIR,—In the January number Capt. Collingwood Ingram draws attention to an error in his paper (Ibis, 1920, p. 857), and states that it is important “as it largely vitiates my definition of Mesoptile.” Capt. Ingram was apparently unaware of my remarks in the ‘Bulletin’ (vol. xxvii. p. 83), when I dealt with the four plumages of the young Eagle-Owl and pointed out that the Barn-Owl was exceptional and that the third plumage was suppressed in that species. Further investigations have led to the conclusion that in other groups of birds we may also have three generations of plumage prior to the first adult dress. Mr. Pycraft, apparently being unaware of this fact, called these plumages protoptiles, mesoptiles, and teleoptiles, and I suggested that the generation immediately preceding the adult dress should be known as *hemiptiles*. My nomenclature therefore agrees with Capt. Ingram’s in calling the “second generation of feathers” mesoptiles, but these do not immediately precede the adult feathers. Mesoptiles, as I understand them, are the generation preceding the *hemiptiles*, which in the Passeres are what is commonly known as the juvenile plumage. It is expedient in this, as in other branches of Ornithology, to keep our nomenclature as uniform as possible.

J. LEWIS BONHOTE.

Carshalton,
8 January, 1921.

Nestling Owls.

SIR,—Captain Collingwood Ingram in his letter correcting the mistake he had made between the Barn Owl and Tawny Owl might have added the Scops (*Scops giu*) to the list of Owls which do not have any intermediate down between the first nestling down and the assumption of the complete feather plumage. This is recorded in the ‘Avicultural Magazine,’ August 1899, page 160 :—

“The white down in the nestling is replaced by a plumage almost precisely resembling that of the adults, so they differ

from all the Owls, except the Barn Owls, in having no intermediate down between the casting of the white down and the assumption of full plumage."

Incidentally, I may draw attention to other facts mentioned in the same article on the breeding of the Scops Owl, which point out how widely the Scops differ from all other Owls. Incubation only lasts twenty-three to twenty-four days. The young, instead of remaining long in the nest and being tended by the parents for a long time afterwards, are just the reverse. Young hatched on 10 June left the nest strong perchers on 1 July, and by 10 July were strong fliers and independent. It will thus be seen that the young Scops is full grown, full fledged, and independent at thirty days old. All the other Owls are in the nest or, at any rate, dependent on their parents for at least three months.

E. G. B. MEADE-WALDO.

Hever, Kent,
6 February, 1921.

The Status of *Picus rubricollaris* Baker.

SIR,—In a letter dated January 7th, 1921, my colleague, Mr. C. Boden Kloss, has asked me to point out that the handsome Woodpecker described by Mr. Stuart Baker and figured in the last number of 'The Ibis' as *Picus rubricollaris* is wrongly attributed to Siam, the localities in which it was collected being, as a matter of fact, both in French Laos, on or near the River Mekong.

Further, the new "species" appears to be identical with, or extremely closely allied to, a bird figured and described by Oustalet twenty-two years ago as *Gecinus rabieri* (Bull. Mus. d'Hist. Nat. 1898, p. 12; id. Nouv. Arch. du Mus. (4) i. 1899, p. 255, pl. vii.) founded on two unsexed specimens, considered males, but evidently females; from Tonkin.

I have myself compared Mr. Baker's types with Oustalet's figures and description, and have not the least doubt that Mr. Kloss is perfectly correct. The slight differences between the actual bird from the Mekong and the figure

of *Gecinus rabieri* are not more than can be accounted for by the notorious incorrectness of the plates in the *Nouv. Arch.*, which frequently do not agree with the text.

The figures in 'The Ibis' also are unfortunately not all that can be desired—the male especially is shown with the red collar far too pronounced.

Yours truly,

London,
7 February, 1921.

HERBERT C. ROBINSON.

The Annual General Meeting of the British Ornithologists' Union.

The Annual General Meeting of the British Ornithologists' Union for 1921 was held on Wednesday, March 9, at the Offices of the Zoological Society of London, Mr. G. M. Mathews in the Chair.

There were 36 members present.

The Minutes of the last meeting were read and confirmed.

Mr. H. J. Elwes, F.R.S., F.Z.S., was unanimously elected President of the Union in place of Dr. W. Eagle Clarke resigned.

Before proposing members to fill vacancies on the Committee, the Chairman informed the meeting that he proposed to put up the three members nominated by the Committee, and to then take the feeling of the meeting as to whether the remaining two vacancies should be filled at once or in accordance with the method approved at the previous Annual Meeting. The Rev. F. C. R. Jourdain at this point interposed, objecting to this method of procedure on the grounds that Major Sladen had not been proposed merely for the purpose of filling one of the two existing vacancies, but to fill any one of the three or five vacancies which the meeting should decide to fill. After some discussion the Chairman decided that the meeting should be asked to express their opinion by voting. On a show of hands the motion proposed by Mr. Bonhote and seconded by Mr. Smead

that all the vacancies should all be filled at once was carried by 15 to 9, many members not voting.

The five members nominated were then unanimously elected, with the exception of Mr. C. D. Borrer, who was elected by 11 votes to 8.

The following Foreign Member was elected Honorary Member :—

Dr. E. D. Van Oort.

The following were elected Foreign Members :—

Dr. Otmar Reiser.

Mr. Richard C. McGregor.

Mr. Charles B. Cory.

The Chairman then called upon the Secretary to read the Report of the Committee for 1920, viz. :—

“The Committee regret that they have to report that the financial position for 1920 is even more unsatisfactory than that for 1919, and the year under report ended with an adverse balance of practically £190. The reason for this adverse balance is entirely the great cost of publishing ‘The Ibis,’ which increased from £1000 in 1919 to practically £1300 in 1920. At the same time it should be noted that ‘The Ibis’ for 1920 contained a greater number of pages than that of a normal year.

“To meet the deficit in the Society’s funds, the Committee recommended at a special General Meeting called together on the 13th of October that the subscription should be raised to £2. This recommendation was unanimously adopted, and will be put before the present meeting for confirmation. The Committee are very glad to report that, pending this confirmation, a large majority of the members of the Union have already subscribed the full £2 for the present year.

“The Trustees of the British Museum have, we regret to say, declined to again give us any donation towards the cost of publishing Museum articles in ‘The Ibis,’ but it is still hoped that they may be induced to contribute something towards the actual expenses of such articles.

“The Committee anticipate that with the increase of the subscription to £2 and entrance fee to £4, the funds received will be sufficient to cover the expenses of the Union and to provide a small balance.

“The present volume of ‘The Ibis’ is the sixty-second, and is the second of the Eleventh Series. It contains 1022 pages, and is illustrated with five coloured plates, thirteen uncoloured plates, and three text-figures—that is to say that ‘The Ibis’ for 1920 contains nearly 200 pages more than that for 1919, although even for that year ‘The Ibis’ was much larger than usual.

“The Committee have given instructions that ‘The Ibis’ be sold to the public at the rate of 12s. 6d. per number and to members at 10s. Members will, we trust, appreciate the fact that we sell ‘The Ibis’ for less than it costs to print and publish.

“The Committee regret to report the deaths of the following members:—

Sir J. A. Brooke.	C. G. Finch Davies.
R. Etheridge.	J. Gerrard.
Rev. C. W. Shepherd.	

“The following gentlemen have resigned:—

Major W. B. Arundel.	B. S. Ogle.
Brig.-General A. Bailward.	Sir T. D. Pigott.
Captain G. Blaine.	Lt.-Col. A. E. St. V. Pollard.
D. C. Campbell.	J. T. Proud.
J. Drummond.	Capt. C. G. E. Russell.
G. H. Duckworth.	A. St. G. Sargeaunt.
Rev. A. E. Ellison.	W. L. Sturge.
C. Garnett.	Lt. G. Swann.
A. R. Gillman.	M. Vaughan.
Lt.-Col. A. E. Hamerton.	Commr. R. E. Vaughan.
J. C. Hawkshaw.	E. M. Wade.
G. B. Honey.	Lt.-Col. H. J. Walton.
E. Hudson.	H. Wormald.
Major H. Jones.	Lt.-Col. J. W. Yerbury.
E. B. Maton.	

"The name of Mr. B. A. E. Buttress has been removed from the list of members under Rule 6.

"The membership of the Union is given below in comparison with the last five years :—

		1921.	1920.	1919.	1918.	1917.	1916.
Ordinary	Members...	423	418	418	423	416	420
Extraordinary	„ ...	1	1	1	1	1	1
Honorary	„ ...	9	9	7	8	9	9
Hon. Lady	„ ...	8	8	8	8	9	8
Colonial	„ ...	10	10	9	9	10	10
Foreign	„ ...	16	16	13	20	19	19

"There are 49 candidates for ordinary membership and the fact of so large a number of gentlemen coming forward for election to the Union is most satisfactory, and one which has not been lost sight of by the Committee when considering the increase to the subscription to the Union."

The accounts were then approved and passed, after Mr. Bunyard had asked the Secretary what the legal charges were for.

The resolution approved by the Special General Meeting "that the annual subscription be raised from £1 5s. to £2"—Rule 5 to read :—

"Every new Ordinary Member shall pay an Entrance Fee of £4, and an Annual Subscription of £2 on his election, and every Ordinary Member shall pay an Annual Subscription of £2 on the 1st January of each year. Every new Ordinary Member failing to pay his Entrance Fee and his first Annual Subscription before the 31st December immediately following his election, shall have his election annulled, unless he shall furnish a satisfactory explanation."

was then put to the meeting for confirmation and was carried unanimously.

The Chairman then put to the meeting a recommendation of the Committee that Rule 13 be amended by adding after

the words "can be summoned by" the words "by the Committee or"—Rule 13 to read:—

"A special General Meeting can be summoned by the Committee or by any ten members of the British Ornithologists' Union on a written requisition addressed to the Committee for that purpose, which requisition shall specify the object of such special meeting. At such special Meeting the special business to consider which it was convened, shall alone be discussed. The Honorary Secretary when calling a meeting on any application shall allow at least ten days to intervene between the date of issue of the notices and the date fixed for the meeting."

This was also carried unanimously.

A third recommendation of the Committee that Rule 17 be amended by adding after the words "Annual General Meeting" the words "or at a General Meeting called by the Committee for that purpose"—Rule 17 to read:—

"Any alteration or addition made to these rules may be adopted by a majority of two-thirds of the members present at the Annual General Meeting or at a General Meeting called by the Committee for that purpose provided due notice shall have been given thereof in the circular convening the meeting."

There was a little discussion before the motion was voted on, one or two members making certain remarks in reference to the words "a majority of two-thirds." After this it was put to the meeting and carried unanimously.

Before proceeding to the next recommendation of the Committee with respect to the Committee appointed to consider records of occurrences of rare and hitherto unknown bird visitors to Great Britain, the Chairman informed the meeting that Dr. Eagle Clarke had expressed a desire that his name should be removed from the Committee, although he would be very pleased to act in an advisory capacity with regard to any Scotch records.

The Chairman then read the recommendation of the Committee :—"That the Committee, viz. Mr. A. H. Evans, Dr. E. J. O. Hartert, Mr. T. Iredale, Rev. F. C. R. Jourdain, Mr. G. M. Mathews, Mr. W. L. Selater, Dr. N. Ticehurst, Mr. H. F. Witherby, and Mr. E. C. Stuart Baker as Secretary to the Committee, elected at the last Annual General Meeting for five years to coincide with the election of the President of the Union to consider records of occurrences of rare and hitherto unknown bird visitors to Great Britain be, owing to the resignation of the President, re-elected *en bloc*."

This was carried *nem. con*.

The Rev. J. R. Hale and Mr. J. L. Bonhote were elected and consented to act as Scrutineers.

The following 49 candidates for Ordinary Membership were then balloted for and elected :—

Major Frederick Marshman Bailey, C.I.E.

Lieut. Cyprian Thurlow Baker.

Miss Mary Best.

John Brindley Bettington.

John Osmund Beven, M.A., M.R.C.S., L.R.C.P.

Frederick N. Chasen.

Capt. Richard Rees Davies.

Robert Heward Deane.

George Edward William Dempster.

Capt. Frederick Wynford Dewhurst.

Arthur McNeill Farquhar.

Gilbert George Feasey.

Frank James Richard Field.

Lieut. Harold Bingley Finch, M.C.

Kenneth Fisher.

Richard Taunton Francis, F.Z.S.

David Eric Wilson Gibb.

Capt. Humphrey Adam Gilbert.

Edwin Leonard Gill, M.Sc.

William Edwin Glegg.

Miss Eva M. Godman.

John G. M. Gordon.
Dr. James Harrison, M.R.C.S.
Robert Elliott Harvey.
Capt. Charles William Robert Knight, M.C.
Stanley Lewis.
Thomas Lewis, F.R.S., C.B.E.
Dr. George Carmichael Low, M.R.C.P.
Nathaniel Sampson Lucas, M.B.
Arthur Frederick McConnell.
The Viscount Maidstone.
Allister William Mathews.
John Henry McNeile.
Cecil Norman.
John Henry O'Connell, L.R.C.P. & S.I.
Owen Rodenhurst Owen.
Arthur Hamilton Paget-Wilkes.
Charles Joseph Patten, M.A., M.D., Sc.D.
Haus Thomas Lange Schaanning.
Guy Chesterton Shortridge, M.B.E.
The Vicomte Louis de Sibour, F.Z.S.
Arthur de Carle Sowerby.
Jesse Austin Sydney Stendall.
Andrew Denys Stocks.
Cecil Vesey Stoney, J.P., D.L.
Mrs. Rose Haig Thomas.
John Francis Donald Tutt, M.R.C.V.S., F.R.M.S.,
F.Z.S.
Thomas Wells.
Major William Wordie, O.B.E., M.A.

Before the Meeting dissolved, the Rev. F. C. R. Jourdain explained the objects of the Oxford expedition to Spitsbergen, and after some remarks by Messrs. Trevor-Battye and H. J. Elwes,

Lord Rothschild proposed and Mr. Elwes seconded a vote of thanks to the Zoological Society for the use of the Meeting-room.

Mr. Seth Smith proposed and the Rev. J. R. Hale seconded a vote of thanks to the Auditor.

These were carried unanimously, as was also a vote of thanks to the Chairman.

The Annual Dinner after the Meeting was well attended, over 100 members being present.

The Oxford Expedition to Spitsbergen.

An expedition to Spitsbergen is being organized by the University of Oxford, and a sum of at least £3000 is required to carry out the work. The Oxford expedition is entirely scientific in its objects and aspirations. Special attention will be paid to ornithology. The breeding-habits and migratory movements of many of the rarer Arctic species are practically unknown, and the problem of reversed sexual selection, a subject very inadequately investigated, is found exclusively among birds whose breeding-grounds are in the north. The ornithological members of the party will make close and extensive observations and will not confine themselves to eggs and skins.

The expedition has the sanction and support of the University of Oxford, as well as of the heads of all the scientific departments concerned. It is proposed that two parties shall go out in sealing-sloops, the first early in June and the second a few weeks later, when the north coast is more likely to be free from ice. Although, as we have said, a sum of at least £3000 is necessary, if a larger sum is forthcoming the scope of the expedition, which will last only two or three months, could be profitably enlarged. The Rev. F. C. R. Jourdain is Chairman of the Committee, and contributions will be welcomed by and should be addressed to Mr. G. Binney, Hon. Secretary, Oxford University Expedition to Spitsbergen, Merton College, Oxford.

Personalia.

The marriage of Col. Richard Meinertzhagen, D.S.O., and Miss Annie C. Jackson, which took place on March 3 last, unites two well-known ornithologists and Members of the British Ornithologists' Union, and is an event unique in our history. We offer our heartiest congratulations and best wishes to the newly married pair, in which we are sure all our members will join us.

Mr. A. F. R. Wollaston, M.B.O.U., has been appointed naturalist and medical officer to the Mt. Everest Expedition, which is being organized under the joint auspices of the Royal Geographical Society and the Alpine Club. We hope he will not forget the claims of ornithology, and that he will devote some of his spare time to observing and collecting the birds of Tibet and the high country surrounding Mount Everest.

Our late President, Dr. W. Eagle Clarke, who has been Keeper of the Natural History Department of the Royal Scottish Museum since 1906, retired under the Civil Service age limit on March 15 last. We understand that the post of Honorary Supervisor of the bird collections has been offered to Dr. Eagle Clarke by the Secretary for Scotland, and has been accepted by him, so that his connection with the Royal Scottish Museum will not be entirely severed. We congratulate the Royal Scottish Museum on being able to retain Dr. Eagle Clarke's valuable services for a further period.

We learn that Mr. Frank M. Chapman, Curator of Birds of the American Museum of Natural History, is shortly arriving in England for a visit.

THE IBIS.

ELEVENTH SERIES.

VOL. III. No. 3. JULY 1921.

XXI.—*Field Notes on the Birds of Lower Egypt.* By
W. RAW, M.B.O.U. *With Contributions by* Colonel R.
SPARROW, C.M.G., D.S.O., M.B.O.U., *and the Rev.*
F. C. R. JOURDAIN, M.A., M.B.O.U.*

113. **Coracias garrulus garrulus.** Roller.

Numerous, passing through Abu Zabaal from 8 August onwards. Never observed there in the spring, but was common at Kantara at the end of April 1919.

114. **Ceryle rudis rudis.** Pied Kingfisher.

Common and resident. I took a clutch of four eggs at Abu Zabaal on 26 April, 1917, and another of five fresh eggs at Inchas on 12 May, 1918. The nesting-hole was about four feet long in a bank overhanging a canal.

[The only clutch taken was at Ayat on 11 May, 1910, and consisted of four eggs slightly incubated. The nest-hole was in the Nile bank a few feet above the water.—R. S.]

* Continued from p. 264.

115. **Alcedo atthis atthis** (= *A. ispida pallida* auct.).

Kingfisher.

Arrives at Abu Zabaal towards the end of August and remains throughout the winter, leaving again in April.

I have compared specimens from Abu Zabaal at the British Museum and refer them to this form.

116. **Iynx torquilla torquilla**. Wryneck.

More numerous as a spring migrant than in the autumn. Average dates 5 April and 12 September.

117. **Cuculus canorus canorus**. Cuckoo.

Not uncommon on both migrations. I shot a male as late as 6 May, 1916, and another on 15 September, 1918.

118. **Cuculus canorus telephonus**. Cuckoo.

I include provisionally under this name a race of Cuckoos which pass through Abu Zabaal each spring. A bird shot by me on 6 May, 1916, was identified by Mr. M. J. Nicoll as *C. c. saturatus*. Every successive spring I obtained specimens, and a pair were shot out of a bunch of nine seen on 17 April, 1917. On 21 May, 1917, I shot a beautiful hepatic form out on the desert, and a bird only less red and beautiful was shot at the Birket Accrashi on 5 May, 1917.

I gave all my specimens except one to the Giza Museum and Mr. J. L. Bonhote. I compared my specimen with birds in the British Museum, and matched it with five or six large-winged birds from western Asia. These were as yet unidentified, and may possibly be a new race hitherto undescribed. I hope to compare the birds in Mr. Bonhote's collection shortly. I submitted my bird to Dr. E. Hartert, and he kindly gave me his opinion on it as follows:—"Your bird is as large as largest *telephonus*, but it does not show a particularly finely-barred underside. No such race is known which combines the larger size of *telephonus* with the stronger barring of *C. c. canorus*. I would therefore call it *telephonus*."

It certainly is not *C. c. saturatus*, which Dr. Hartert informs me should be called *Cuculus optatus*, and which is unlikely to occur in Egypt.

119. *Clamator glandarius*. Great Spotted Cuckoo.

Not uncommon at Abu Zabaal, and observed at various times throughout the year. I shot a bird of the year there on 30 April, 1916, and an adult male on 6 May, 1916. I had very little luck with the eggs of this species, and despite much work done in searching the nests of Hooded Crows, I only found one egg. This was in a nest containing also three eggs of the Hooded Crow on 6 June, which must be a very late date indeed, as the Crows have finished breeding at this date as a rule.

[The only three eggs of this species I have from Egypt were taken by a native at Luxor on 22 March, 1910, from a nest of the Hooded Crow, and were considerably incubated.—R. S.]

120. *Centropus ægyptius*. Lark-heeled Cuckoo.

[Common at Ibshawai in the Fayûm at the end of March 1910, where it is undoubtedly resident, but I never found its nest.—R. S.]

121. *Bubo bubo ascalaphus*. Egyptian Eagle-Owl.

I only saw three birds at Abu Zabaal during the whole of my stay. Two of these I wounded, and are, or were when I left Egypt, still alive in the Giza Zoo. All were of the pale form. The dates were 23 June, 26 August, and 8 October.

Captain W. Bigger found a nest containing three young birds in a crevice of rock on the Moqattam Hills behind the Citadel, Cairo, on 20 May, 1917.

It is said to breed on the Pyramids at Giza and Dahshûr, but I was never able to find it there.

[This Owl used to nest near all the Pyramids: eggs are laid under an overhanging rock, and the full clutch is three.

Eggs, Pyramids of Giza, March 1893. Eggs, Abu Roash, 20.iii.94, one fresh, one hatching; clutch of three slightly incubated at Dahshûr, 28.iii.09. Saqqara, one egg hard-set, 23.iv.09.—R. S.]

122. *Asio flammeus flammeus*. Short-eared Owl.

I have met with this Owl annually in the spring, but never in the autumn that I remember. It is very often to be seen sitting on the desert in the full glare of the sun with no protection whatever. It is most numerous between the last week in March and the second week in April.

123. *Athene noctua glaux*. Southern Little Owl.

Abundant wherever suitable places offer shelter. I have found fresh eggs as early as the first week in April and as late as the middle of May. The clutch consists of four to six eggs as a rule.

[This Owl frequently nests in large heaps of stones. I found a clutch of seven eggs once, though six seem to be the usual clutch. It nests at Mena, Abu Sueir, and Abu Roash. My earliest date for fresh eggs is 1 April (a clutch of six), and two fresh eggs as late as 18 June, so it is probably double-brooded.—R. S.]

124. *Tyto alba* subsp.? Barn-Owl.

Seen and heard occasionally at various times throughout the year. Is sometimes fairly numerous at Abu Zabaal, especially in October, when it preys on the large flocks of Spanish Sparrows which roost in the reed-beds and orange-groves. I only secured its eggs twice,—a pair of fresh eggs at Abu Roash on 1 April, and a clutch of four in an old shed near the Barrage on 2 May, 1918. This latter nest had two dead mice near it.

[This species nests commonly near the Pyramids at Abu Sueir, Giza, Bedrashein, and also at Abu Roash, generally at the bottom of a shaft from which a mummy has been removed. I have taken fresh eggs between 20 March and 14 April. Clutch frequently five or six.—R. S.]

125. *Falco peregrinus* [*calidus*?]. Peregrine Falcon.

A specimen of one of the large northern races of this species, probably the Siberian form, was seen but not obtained at Abu Zabaal on 24 February, 1917.

126. *Falco peregrinus pelegrinoides*. Barbary Falcon.

Mr. M. J. Nicoll and myself saw a pair of Barbary Falcons feeding young in a nest on the Dahshûr Pyramids on 12 April, 1918. The site was about sixty feet up on the eastern slope and in an impossible place to examine. The Egyptian riots prevented me looking it up again in 1919.

[On 28 March, 1909, I took three fresh eggs from a low ledge on the Dahshûr Pyramid. The eggs are decidedly smaller than those of the Lanner, averaging 49.7×38.1 mm. in size, and in appearance not unlike Hobby's eggs.—R. S.]

127. *Falco biarmicus tanypterus*. Lanner Falcon.

Seen occasionally perching on our tall wireless masts: usually in the autumn. Captain W. Bigger found a nest on which the bird was sitting, on an inaccessible ledge in the cliffs behind the Citadel in Cairo, on 30 March, 1917, and another in the Moqattam Hills, which probably contained young birds, on 5 April, 1917. I found no trace of its breeding on the Great Pyramids.

[Used to breed annually on the north side of the second Pyramid at Giza, from which place I had four young on 30 April, 1893. In 1894 I took a clutch of four eggs, slightly incubated, on 18 March, from the same place. Three of these eggs are like dark Kestrel's eggs in type, the fourth plum-coloured. Average size 52.7×43.2 mm.—R. S.]

128. *Falco concolor*. Sooty Falcon.

On 18 April, 1918, a Sooty Falcon was observed near the Birket Accrashi, and was still in the same vicinity on 20 April. I shot a fine immature bird at Abu Zabaal on 6 August, 1918: it was chasing some Hooded Crows at the time. Major F. W. Borman obtained some information about this species breeding near Sollûm, on the Mediterranean seaboard, but the full particulars are not yet to hand.

129. *Falco subbuteo*. Hobby.

Seen sparingly in the winter months. One shot on 19 October, 1916, at the Birket Accrashi.

130. *Falco columbarius æsalon*. Merlin.

Not uncommon during the winter, arriving on the heels of the autumn migration and remaining until March. Examples obtained on 12 November, 1916, and 15 January, 1917.

131. *Falco vespertinus vespertinus*. Red-footed Falcon.

About the same number observed as of the preceding species and at about the same times. Examples shot on 19 and 22 October, 1916.

132. *Falco naumanni naumanni*. Lesser Kestrel.

I appear to have no record of meeting with this bird during autumn or winter. It is very common during the last week in March and early in April, at which season I have observed quite fifty at a time flying round the Birket Accrashi.

133. *Falco tinnunculus rupicolæformis*. Egyptian Kestrel.

Common and resident. This species is very fond of building in holes in the sides of native houses. Old nests of the Hooded Crow are also favoured as sites, and one pair nested annually on the top of a palm-tree which had died and shed its leaves. Another pair reared two broods in the cage at the top of one of our wireless masts, 300 feet above the ground. It lays from the end of March until the end of May, from three to five being a clutch. Lizards and locusts form a large part of their food in the breeding-season, and I seldom observed them take birds.

[My dates range from 30 March to 30 April. I took one nest from No. 3 Signal Tower on the Suez road. My largest clutch is four.—R. S.]

[As compared with eggs of the Common Kestrel, those of the Egyptian bird are decidedly small. The average of fifty-five eggs collected by Mr. Raw and Colonel Sparrow is 35.8×30.2 mm., whereas British eggs average 39.7×31.7 mm.—F. C. R. J.]

134. *Aquila heliaca heliaca*. Imperial Eagle.

I several times observed Eagles soaring in the vicinity of Abu Zabaal, but was unable to identify them to my satisfaction. One which I saw sitting on the desert on 14 February, 1914, I was able to identify as the above species, from skins in the Giza Museum and notes made on the spot.

135. *Buteo buteo rufiventer*. (= *B. desertorum* auct.)
Steppe-Buzzard.

I never shot one of these birds, although they were not uncommonly seen, but were always wide awake and difficult of approach. A single bird remained in the vicinity of Abu Zabaal throughout September 1918. Also observed at odd times throughout the winter and early spring.

It is quite possible that some of those seen were referable to *Buteo ferox*, but I was never quite satisfied that such was the case. Colonel Meinertzhagen has, moreover, shown that *B. ferox cirtensis* ranges into southern Palestine (Ibis, 1920, p. 241).

[Mr. M. J. Nicoll saw a pair in the Wadi Hof, apparently breeding, on 1 March, 1910. I saw a pair in the same place on 5 May, 1909. Another pair frequented the Giza gardens in May 1910, and probably bred there, as in June they were seen accompanied by two young birds.—R. S.]

136. *Circus æruginosus*. Marsh-Harrier.

One or more birds haunted the Birket Accrashi throughout the winter. These were, almost without exception, immature birds. They were frequently mobbed by Hooded Crows, and waxed fat on any wounded birds we were unable to retrieve. A pair seen in the Wadi Natrûn on 24 May, 1918, were possibly nesting.

[I saw a pair at Inchas on 12. v. 09, and a single bird at Gheit-el-Nasara on 20. v. 09, so it is quite possible some pairs remain to breed in the Delta.—R. S.]

137. *Circus cyaneus cyaneus*. Hen-Harrier.

Less numerous than the following species. Two or three obtained during the winter and early spring.

138. *Circus macrourus*. Pallid Harrier.

Frequently observed beating the fields and swamps. Several were obtained, one of which, shot on 4 April, 1918, had its hind claw badly ingrown into the pad at the bottom of its foot.

139. *Circus pygargus*. Montagu's Harrier.

Although I never actually shot an example, I believe I have seen specimens during the winter months. A bird observed on 31 March, 1916, by Mr. M. J. Nicoll and myself was, I believe, referable to this species.

140. *Accipiter nisus nisus*. Sparrow-Hawk.

This hawk was frequently observed between late autumn and spring, and I shot several specimens in order to try to identify *Accipiter brevipes* at Abu Zabaal, but in this I was unsuccessful.

141. *Milvus migrans ægyptius*. Yellow-billed or Egyptian Kite.

Common and resident, but does not breed at Abu Zabaal, merely hawking around for food, of which dead fish form a not inconsiderable part. Extremely abundant in Cairo and its suburbs as a resident species, where it is tame and very daring. I have seen these birds swoop down and take cakes off a tea-table spread out of doors, and others diving down in crowded thoroughfares to snatch up a choice piece of garbage and make off with it.

It selects various sites for its nest, but favours tall trees the most, where a large accumulation of nesting material is collected. Ledges on the cliffs behind the Citadel and at Helouan, window-ledges in deserted houses and ruins, and even the flat tops of inhabited houses, are sometimes resorted to. It commences to build very early in the season, and I have taken eggs at the beginning of February, and have observed birds repairing their nests in December in the grounds of the Continental Hotel in Cairo. On the other

hand, I took fresh eggs at Inchas on 11 May, 1916, and have observed birds sitting even later than this date. From one to four eggs are laid, but the latter number is rarely found.

[My earliest date for fresh eggs is Abbassia 28.ii.09, my latest date for incubated eggs is 19.v.09. March is the usual month, and a clutch of two is far commoner than three. At Shubra on 3.iii.09 I found a nest with young. —R. S.]

142. *Haliaëtus albicilla*. White-tailed Eagle.

An undoubted specimen of this species remained round our station for several days in January 1918. Its white tail was very conspicuous when soaring.

143. *Pernis apivorus apivorus*. Honey-Buzzard.

One seen at close quarters on 30 May, 1916, was the only example identified.

144. *Elanus caeruleus caeruleus*. Black-winged Kite.

The only specimen of this splendid species seen near Abu Zabaal was observed in a palm-grove near the Birket Accrash on 19 February, 1916. I believe these birds breed somewhere just north of Giza, on the west of the Nile, but I was unable to secure any direct evidence. It appears very uncommon below Cairo in the Delta, and my observations, contrary to those of Mr. Nicoll, make it anything but crepuscular in its habits.

145. *Pandion haliaëtus haliaëtus*. Osprey.

I have five records of observing this species at Abu Zabaal, and all are in the month of April. On 26 April, 1917, Lieut. D. Paton shot a fine Osprey, which he gave to me. It was found sitting on one of our wireless masts sheltering from a high wind. This species breeds no farther distant than the Gulf of Suez, but I have no particulars as to exact dates.

146. *Neophron percnopterus percnopterus*. Egyptian Vulture.

Observed sparingly at various times throughout the year. Captain W. Bigger found young birds just on the wing in the hills behind the Citadel on 18 April, 1917, and Dr. Beven informs me that he believes that it breeds in the Wadi el Degla, north of Helouan.

[This species used to be common around Cairo in 1893-94, but is now much scarcer. I saw birds along the Suez Road, in the Wadi Hof, and at Dahshûr, in March 1909. I was told of five fresh eggs, from different nests, being taken at Hash Medibah, Fayûm, on 27.iii.09.—R. S.]

147. *Ægyptius monachus*. Black Vulture.

[One of the large dark Vultures, said to be of this species, nests at Assiout. The nest was in a small sonto-tree, and contained one egg. It was, I believe, found by Mr. Malcolm, but I have lost the record of the date.—R. S.]

148. *Ciconia ciconia ciconia*. White Stork.

This species is very irregular in its visits to Abu Zabaal, and sometimes turns up in what should be the breeding-season. About twenty birds remained throughout nearly the entire spring and summer in the rice-fields at Marg in 1917, and examples were frequently noted at the Birket Accrashî in September and April. None breed, to my knowledge, in Egypt.

149. *Platalea leucorodia* [major?]. Spoonbill.

A flock of Spoonbills flew over Abu Zabaal on 15 March, 1916, flying east, and in September 1918 two lots were observed flying over towards the Nile. I found it numerous on Lake Menzaleh, near Kantara, at the end of April 1919. Although no specimens were obtained, it is evident from specimens in the British Museum that it is the larger form of this species which occurs in Egypt.

150. *Plegadis falcinellus falcinellus*. Glossy Ibis.

A few turn up at the Birket Accrashi every spring, arriving during the first week in April, and remaining some days. Specimens obtained. Never seen in the autumn.

151. *Ardea cinerea cinerea*. Grey Heron.

Numerous on the Birket Accrashi during the winter. Arrives there in September from the north-east, and occasionally remains until the end of April. A wild pair bred in the Zoological Gardens at Giza in 1918, but I have no note of when they laid. I never met with it breeding elsewhere in Egypt, and birds observed in the Fayûm in late March were not breeding there.

[Mr. Nicoll informed me that a pair nested in the Giza Gardens in 1909, 1910, and 1911, and reared young in 1909 and 1910. In 1910 the young had flown by 15 March.—R.S.]

152. *Ardea purpurea purpurea*. Purple Heron.

Purple Herons were noted on the Birket Accrashi during every month of the year except July and August, at which season all the swamp is dried up. I never obtained direct evidence of their breeding in Egypt, but should not be surprised if this were the case.

153. *Egretta alba alba*. Great White Heron.

On 12 November, 1915, I saw a single bird on the Birket Accrashi. This was the only example to come under my observation.

154. *Bubulcus ibis ibis*. Buff-backed Heron.

Thanks to a splendid scheme of protection and a careful supervision by the Zoological Service, this species is again becoming numerous and resident in Lower Egypt. During the latter part of my stay at Abu Zabaal, Buff-backs were often seen there, and during the winter considerable numbers were observed on the marshy rice-fields at Marg. Several large breeding colonies have been established in the Delta,

and a thriving lot breed wild in the grounds of the Zoological Gardens at Giza, where they lay in May and June, rearing two broods annually. They are also re-established in the Fayûm Province, where they are also protected.

155. *Ardeola ralloides*. Squacco Heron.

Squacco Herons appear annually on the Birket Accrashi in small parties about the end of March, remaining until the middle of May. I appear to have no notes of having observed this species in the autumn.

156. *Nycticorax nycticorax nycticorax*. Night Heron.

Single birds and small parties observed on the Birket Accrashi at various times throughout the year, being most often seen in October and November. The only breeding-colony I know of in Egypt is that in the Zoological Gardens at Giza, where I saw young birds about three days old on 8 July, 1916. The same colony had young birds in nests in the banyan-trees on 10 June, 1917. I suspect the existence of another colony somewhere in the neighbourhood of Kafr Aydub, near Zagazig.

157. *Ixobrychus minutus minutus*. Little Bittern.

Resident and fairly numerous, although not often seen. I took two clutches of four eggs each at Inchas on 11 May, 1916, which were half-incubated, and found that this date was consistent in subsequent seasons.

[This species builds a slight nest of rushes in high reeds over deepish water. My dates do not quite agree with those of Mr. Raw, unless the species is double-brooded. Out of nine nests observed at Inchas, three contained five and six four eggs. Fresh eggs 12 May, 4 and 15 June; incubated eggs 29 and 31 May.—R. S.]

158. *Botaurus stellaris stellaris*. Bittern.

I first met with this species on 16 April, 1916, when I shot one on the Birket Accrashi. Later I discovered that it wintered there. In November 1917 I counted nineteen on the wing together, which had been flushed by beaters when duck-shooting.

159. *Phoenicopterus ruber antiquorum*. Flamingo.

Lieut. D. Paton shot a fine example, in my presence, on the Birket Accrashi, on 21 November, 1916. This was my only record from Abu Zabaal, but I found it numerous at the western end of Lake Menzaleh in September and December, and at the eastern end of the lake, near Kantara, at the end of April 1919.

160. *Alopochen ægyptiaca*. Egyptian Goose.

On 10 February, 1916, twelve were seen on the Birket Accrashi, and six days later eighteen were seen flying over. Small lots and one containing over a hundred birds were observed at various times during the winter. A pair of semi-domesticated birds bred in an old Kite's nest in a tree thirty feet from the ground, and had a clutch of addled eggs there on 23 February, 1918.

161. *Anas platyrhynchos platyrhynchos*. Mallard.

Frequently shot at Abu Zabaal, especially in the bed of the old canal, which is overgrown with reeds, making good cover. Present from October until March.

162. *Anas crecca crecca*. Teal.

This is one of the most numerous ducks at Abu Zabaal, and furnished us with good sport—and eating! Abundant from the end of September to March.

163. *Anas querquedula*. Garganey.

This species is observed at Abu Zabaal in spring and autumn, apparently wintering farther south. I have shot it as late as the end of April, and as early as 14 August, on which date I shot three out of a big flock at Marg. A pair seen in the Wadi Natrûn on 24 May, 1918.

[I observed five males and three females at Giza as late as 1 May, 1910, by which date they should have been breeding.—R. S.]

164. *Anas strepera*. Gadwall.

Seen occasionally in winter at the Birket Accrashi, but is never numerous, and I never shot it there. Abundant in the Fayûm in March 1917.

165. **Anas penelope.** Wigeon.

Even scarcer than the following species, but several obtained in the winter months. Also abundant in the Fayûm in March.

166. **Anas acuta acuta.** Pintail.

Seen sparingly at the Birket Accrashi, where I obtained several at various dates, including one example in eclipse plumage.

167. **Anas angustirostris.** Marbled Duck.

Dr. Beven, of Cairo, shot a specimen at Marg, near Abu Zabaal, on 24 September, 1917, in my presence. He presented this bird to me, and it is now in my collection. A pair of birds seen in the Wadi Natrûn on 23 May, 1918.

[Mr. Nicoll had a female sent to him from the Wadi Natrûn, shot 3 May, 1910, with well-developed ovaries, so it is probable that this species breeds in Egypt.—R. S.]

168. **Spatula clypeata.** Shoveler.

Extremely abundant. Large numbers are shot annually on the Birket Accrashi, where they begin to arrive in September, the main body leaving in March–April.

169. **Netta rufina.** Red-crested Pochard.

I shot a fine male which was consorting with the Pochards mentioned below on 27 March, 1912. This was the only specimen met with.

170. **Nyroca ferina ferina.** Pochard.

Occasionally shot, but never very numerous at Abu Zabaal, except in some deep pools in the base of the stone quarries, where about twenty were observed on 27 March, 1919. A few always winter there.

171. **Nyroca nyroca nyroca.** Ferruginous Duck.

Fairly numerous every winter, and a few generally to be seen or flushed out of the reeds on the Birket Accrashi from October to March.

172. *Nyroca fuligula*. Tufted Duck,

Although numerous elsewhere in Egypt—where deeper water occurs—this species rarely turned up at Abu Zabaal; but I obtained a few, notably on 26 October, 1916, when a pair were shot out of several seen.

173. *Pelecanus* sp.? Pelican.

I saw small lots of Pelicans flying over during the autumn, but they never alighted to my knowledge. On 6 August, 1918, three flew over at no great height, going towards the Nile, and a flock of over fifty were observed steering a similar course on 26 November, 1918.

174. *Podiceps ruficollis capensis*. Little Grebe.

On 11 November, 1918, when returning to Abu Zabaal by train, I saw some birds on a pool of deep water in the base of some disused quarries. Two days later I walked up there to see what they were, and was agreeably surprised to identify them as this species. I was astonished to observe three young birds still in the down, one pair of birds in full summer plumage, and three adults in winter plumage. There are practically no reeds or vegetation about the place, which is surrounded by desert. The nest was a mass of rubbish moored against a rock, and was extremely conspicuous. I secured one of the adults in summer plumage for purposes of identification, and on 18 November Mr. J. L. Bonhote and Major F. W. Borman came down to see the others. Little Grebes probably always remain there, and although only a short mile from my quarters I had never really investigated the place before. Throughout the winter of 1918-19 the numbers increased somewhat, and on 6 April, 1919, I found a nest containing four fresh eggs, having four days previously taken an odd egg from another nest. On this date four birds were in summer plumage and five in winter. My departure from Abu Zabaal soon after prevented me making further observations of these interesting birds.

[A clutch of two eggs in my collection was taken at Inchas on 5 June, 1909: probably a second brood.—R. S.]

175. *Columba livia schimperi*. Schimper's Rock-Dove.

Although I never actually shot a specimen, I frequently saw birds which I think were referable to this subspecies, but tame pigeons are so numerous that its status is rather uncertain. I include it as an Abu Zabaal bird because some flocks observed in the springtime were so uniform in colour and kept such regular lines of flight as to make me feel justified in ascribing them to this form. On 5 April, 1918, my friend Dr. Beven, of Cairo, shot a bird from a nest containing two fresh eggs. It proved to be an undoubted example of this race. It had built its nest in an old well on the edge of the desert just south of the Giza Pyramids.

176. *Columba œnas œnas*. Stock-Dove.

I shot a Stock-Dove near Abu Zabaal on 17 December, 1917, and frequently observed specimens in that locality. On 8 February, 1916, I had a good view of eight flying east along the edge of the desert.

177. *Streptopelia turtur turtur*. Turtle-Dove.

Very abundant in the autumn, when large numbers are shot at Abu Zabaal. It usually passes through in early September. Less numerous, but still fairly common, in spring during the last week in April and the first week in May.

178. *Streptopelia turtur isabellina*. Isabelline Turtle-Dove.

I shot an example at Marg on 7 September, 1917. It was migrating along with the preceding species. I have no data relating to the breeding of this form in Egypt, and a specimen shot in the Fayûm on 21 March, 1917, was not breeding. I also observed quite a few in the Wadi Natrûn at the end of May 1918, but could discover no evidence of their breeding there.

179. *Streptopelia senegalensis ægyptiaca*. Palm-Dove.

Common and resident. Breeds in all months from February to October inclusive.

[At Abbassia on 1 May, 1909, I took a clutch of three eggs on which incubation had begun : possibly the produce of two females. Eggs were also taken at Luxor on 31 March, 1910.—R. S.]

180. *Pterocles senegallus*. Senegal Sand-Grouse.

A few inhabit the desert south of Marg, near Abu Zabaal. They fly in to drink at the pools of water there during June, July, August, and September. There is no doubt that they breed there, but I was never able to get far enough out to locate them.

181. *Pterocles coronatus*. Crowned Sand-Grouse.

Occurs sparingly and spasmodically at Marg, where I have shot several in the breeding-season. On 29 August, 1917, Mr. Bonhote, Dr. Beven, and myself shot eleven. It is a remarkable thing that both this species and *P. senegallus* only come in for water in the early morning, and are never seen through the day or in the evening. It doubtless breeds on the sand-dunes south of Marg, and my hunting-guide, Achmed, said the season was June.

182. *Pterocles senegalensis* [= *P. exustus* auct.]. Singed Sand-Grouse.

I include this species on the authority of a native hunting-guide—Achmed Ali Ferahi of Alag—who states that this species turns up with the two preceding ones at Marg about one year in five. I also heard of Englishmen who had obtained it there. Achmed Ali was with me when I shot several examples in the Fayûm, and he identified it on sight and by its call before being shot. In the Fayûm it is common near Tamiia and at Edwa.

[I have a pair of eggs of this species taken on an island at Ayat on 9 May, 1894. I revisited the island in 1910, but failed to see any birds.—R. S.]

183. *Burhinus œdicnemus saharæ*. Saharan Stone-Curlew.

Unlike the following species these birds show a marked preference for the open desert, only coming into the cultivation

in the evening and night-time to feed. Common and resident at Abu Zabaal, where it is usually seen in pairs, but is more gregarious in the winter months, when small parties feed on the edge of the cultivation. I have found many of its eggs by tracking the birds' feet-marks on the sand. The eggs are usually laid well out on the desert from early April until late June. Sometimes only one egg is laid, and I never found three. Two clutches of eggs were taken in the Wadi Natrûn at the end of May 1918, and the birds identified.

[The only pair of eggs I have of this species were taken at Abu Roash on 15. iv. 09.—R. S.]

184. *Burhinus senegalensis*. Senegal Stone-Curlew.

I identified this species at Abu Zabaal by shooting specimens there on 20 September and 23 October, 1918. At that time several were seen in a large orange-grove near the canal. The riots in the spring of 1919 prevented me hunting for their eggs there; this was most disappointing, as I was very interested in its breeding-habits elsewhere. I took fresh eggs of this species at the Barrage near Cairo on 28 April, 1918. These were found on the roof of a large low building, and as many as ten pairs were counted using the same roof as a breeding resort. I never heard of this bird selecting any other site as a nesting-place in Egypt, and it is common in Cairo itself, but rarely met with elsewhere. A pair of birds breed annually on the top of the Lion House in the Zoological Gardens at Giza, laying their pair of eggs on the bare concrete in the full sunlight. Four broods were raised there in 1916, the last clutch being laid during the first week in July. Mr. Nicoll quotes this pair as having raised three young ones on one occasion. I know of no method of distinguishing its eggs from those of *B. æ. saharae*. In habits, however, it is quite different from that species, as it seems to prefer gardens and orchards, and its cry appeared to me to be much louder. During the full moon they were very noisy flying along the Nile.

185. *Cursorius gallicus gallicus*. Cream-coloured Courser.

A few pairs are resident on the edge of the cultivation near Abu Zabaal, and also near Marg. Their numbers increase in August and September, when flocks of up to forty-five have been seen. These contained a percentage of immature birds. At all seasons they are inclined to be gregarious, and I noted the fact that they flew considerable distances at a regular time, about sundown, to feed on the camel-thorn patches which occur on the edge of the desert. There they consumed enormous numbers of small green caterpillars. Throughout my stay the same line of flight was always used with a surprising regularity. I spent more time looking for eggs of this bird than for any other species—and never succeeded. In 1916 I shot a bird of the year in August. In 1917 Captain W. Bigger and myself caught a young bird about a fortnight old, which was feeding with the adults on the edge of the desert. In 1918 Lieut. D. Paton discovered a pair of chicks about a day old. I saw these, and they must have been hatched on a patch of gravel about half a mile out in the desert. This was on 13 May, and two days later I located yet two other lots of young birds in similar situations. With these dates to work on I had hopes of finding eggs in 1919, but unfortunately the riots and my departure from Egypt prevented my doing so. I never met with more cunning and wide-awake birds, and as their breeding numbers were so small, finding their eggs was a difficult proposition. I saw young Coursers about a fortnight old on the desert at the Wadi Natrûn on 24 May, 1918, and have little doubt but that it breeds on the edge of the desert both east and west of the Nile.

186. *Glareola pratincola pratincola*. Common Pratincole.

Major F. W. Borman found the red-winged form breeding near Sidi Salem in 1918.

On 29 May hard-set eggs and young birds were found by him on a piece of waste ground, Sidi Salem is in the Delta near the coast. The clutch appeared to be two or three.

[At Inchas on 28 April and 3 May, 1909, I shot specimens

of Common Pratincole with ovaries much enlarged, but they did not remain at Inchas, as on 29 May I did not see a single bird.—R. S.]

187. *Glareola melanoptera*. Black-winged Pratincole.

I shot an immature bird of this species near the Birket Accrashi on 4 October, 1916. Parties of Pratincoles (species?) were seen passing over on 14 April, 29 August, and 4 September, 1917, and on similar dates in 1918.

188. *Charadrius hiaticula hiaticula*. Ringed Plover.

Frequently observed on the Birket Accrashi from September to March.

189. *Charadrius dubius curonicus*. Lesser Ringed Plover.

Equally numerous with the preceding species, with which it arrives and departs. One seen at Marg on 14 August, 1917.

190. *Charadrius alexandrinus alexandrinus*. Kentish Plover.

I first identified this species at Abu Zabaal by shooting one there on 16 June, 1916. More were observed on 13 July, and it often turned up with other Waders during the succeeding winter, but does not breed there. It is abundant nearer the sea-coast as a breeding species, and eggs have been taken there from April to June. I took a clutch of three fresh eggs in the Wadi Natrûn on 27 May, 1918, and observed numbers of young birds there about the same date.

[A common breeding species on the islands in Lake Mönzaleh. On 20–22 May, 1909, I found six nests, all but one having hard-set eggs or young just hatching. The nests were in various situations: one on dry mud, several on red earth, others on a small beach covered with small shells. In the first two cases the nests were easy to find: in the latter difficult.—R. S.]

191. *Charadrius varius varius*. Kittlitz Plover.

Frequently observed and obtained at the Birket Accrashi during the winter months. It usually disappeared in early March, but I have seen it there until the end of that

month. It is a remarkable thing that it does not remain to breed at Abu Zabaal or Inchas, where suitable ground is abundant, for it breeds nearer the coast, and is numerous in the nesting-season on the shores of Lake Qarûn in the Fayûm Province. In the latter locality I found five nests between the 18th and 21st of March, 1917. Two eggs are a full clutch, and the bird always covers the eggs prior to leaving them. They are completely covered up and very difficult to find, but I discovered tracking the bird in the sand quite a good plan, for they always run away when danger approaches. I shot a female from the nest, and proved by a post-mortem that two was a full clutch. Sometimes the eggs are laid near to the water's edge, but more frequently a hundred yards or more from the nearest water, and always quite in the open. By watching through a pair of field-glasses from a distance, one can see the bird rapidly scratching the sand or dry mud over the eggs when they are alarmed; they then casually stroll off. We did not meet with this species in the Wadi Natrûn in May 1918.

Major F. W. Borman was able to confirm my observations in 1918, when he took three clutches of eggs at Sidi Salem on 29 May. Thus it would appear that this bird is at least double-brooded.

[I took one fresh egg on waste ground near Lake Qarûn on 27 March, 1910. In South Africa, where I found several nests, my observations agree with Mr. Raw's, but if one rode near the nest the bird, instead of running away, stood up over the eggs and flapped her wings, and on dismounting pecked at a friend's finger. This procedure is to drive off sheep and goats, and if a flock of goats were driven over the nesting-ground I believe every nest could be found.—R. S.]

192. *Charadrius mongolus geoffroyi*. Geoffroy's Plover.

A rare bird at Abu Zabaal. I only met with one bird, which I shot on 1 August, 1917. It was a bird of the year, and was feeding with some Cream-coloured Coursers on the desert scrub. Fairly numerous on the coast in September 1916.

193. *Charadrius morinellus*. Dotterel.

Occasionally small parties were observed at Abu Zabaal. Usually seen on dry fallow land or the open desert. In some winters more numerous than others. Is always tame and confiding. Specimens obtained on 19 December and 2 January.

194. *Himantopus himantopus himantopus*. Black-winged Stilt.

This species passes through Abu Zabaal in spring and autumn. Observed between 22 March and 16 April and during the first fortnight in September.

Major F. W. Borman and I found six pairs breeding in a most foul swamp at the Wadi Natrûn in 1918. We found three nests containing eggs much incubated on 25 May. Two nests contained three eggs, and one nest two.

195. *Hoplopterus spinosus*. Spur-winged Plover.

Common and resident at Inchas, and fairly numerous at Abu Zabaal. This species breeds from 10 April onwards, and I saw a clutch of four eggs near the Birket Accrashî as late as 10 August, 1910. The eggs are frequently laid on the margin of a pool of stagnant water, and sometimes are quite conspicuous by being shown up in the white salty deposit left by the receding water. Four is the usual clutch, but I have found the bird sitting on two or three only. This species is very wary, and is much detested by shooters, as it gives a very noisy alarm on the approach of danger. Eggs were taken in the Wadi Natrûn, and newly-hatched chicks seen at the end of May 1918.

[My dates for fresh eggs taken at Inchas vary from 20 April to 27 June, though mid-May seems to be the best time. I have one pair of eggs, incubated when found, which have a very strong erythristic tendency.—R. S.]

196. *Recurvirostra avosetta avosetta*. Avocet.

A flock of twelve were identified when flying over Abu Zabaal on 28 September, 1916.

197. *Chettusia leucura*. White-tailed Plover.

A single bird observed at the Birket Accrashi on 19 September, 1917, where it remained for a week. Several shot near Tamiia, in the Fayûm, in February and March.

198. *Vanellus vanellus*. Green Plover.

Large flocks appear at intervals at Abu Zabaal from October to March. Four were seen as late as 16 April, but I found no evidence of any remaining to breed in Egypt.

199. *Erolia ferruginea*. Curlew Sandpiper.

Never observed in the spring, but noted and obtained in the autumn; notably, on 6 October, 1916, when I shot four out of a large bunch, on the Birket Accrashi. They were then in full winter plumage.

200. *Erolia alpina*. Dunlin.

Rather uncommon at Abu Zabaal, but occurs sparingly every winter. A specimen was shot on 11 October, 1916.

201. *Erolia minuta*. Little Stint.

Most numerous in October and March, when flocks haunt the open pools on the Birket Accrashi. Small lots appear at intervals throughout the winter.

202. *Erolia temminckii*. Temminck's Stint.

Less numerous than the preceding species, with which it consorts. Examples of each were shot out of the same flock.

203. *Tringa totanus totanus*. Redshank.

Not uncommon at the Birket Accrashi during the winter months. Usually arrives in early October, and noted as late as 10 May.

204. *Tringa stagnatalis*. Marsh Sandpiper.

A large flight observed and specimens obtained on 6 October, 1916, on which date the Birket Accrashi was alive with Waders of various species. Observed sparingly throughout the winter.

205. *Tringa nebularia*. Greenshank.

Occurs singly and rarely at Abu Zabaal. It was noted on 14 August, 24 August, 7 September, 10 October, and 11 February.

206. *Tringa ochropus*. Green Sandpiper.

Winters at Abu Zabaal, and on the rice-fields at Marg. Arrives as early as 10 August, on which date, in 1918, I saw at least twenty. It is usually observed alone, and is not nearly so gregarious as the following species. Some few birds remain until May before taking their departure.

207. *Tringa glareola*. Wood-Sandpiper.

More numerous than the preceding species. Small parties observed as early as 14 August, and as late as 22 May. Between these dates it is common at the Birket Accrashi.

208. *Tringa hypoleuca*. Common Sandpiper.

Single birds observed during nearly all the months of the year. Several seen on 21 July, and four on 8 August, 1917. Frequents the sides of the canals, and is rarely seen on the Birket Accrashi. I have no evidence of its breeding in Egypt, but should not be surprised if such is the case.

209. *Philomachus pugnax*. Ruff.

Large numbers of Ruffs are to be seen at the Birket Accrashi, especially in October and March, but less numerous between these dates. Early arrivals were noted on 3 September, and late birds linger until 1 May. I never saw one in anything like full summer plumage.

210. *Numenius arquatus arquatus*. Curlew.

Rarely observed at Abu Zabaal, but single birds noted on 30 August, 7 September, 4 October, and 15 October, etc.

211. *Limosa limosa limosa*. Black-tailed Godwit.

Observed and obtained at the Birket Accrashi in spring and autumn, and seen sparingly throughout the winter. On 22 March, 1916, a bird of this species struck our aerial wires,

and damaged its wing. It lived for a considerable time in one of the aviaries at Giza. Earliest arrival noted on 22 September.

212. *Limnocryptes gallinula*. Jack Snipe.

Not uncommon at the Birket Accrashi, where I have shot it from 7 October to 11 April.

213. *Scolopax rusticola rusticola*. Woodcock.

This species winters sparingly in the palm-groves at Alag and Marg, near Abu Zabaal. I shot specimens there on 23 December, 1917, and 6 February, 1918, and have seen others between these dates.

214. *Rhynchæa bengalensis*. Painted Snipe.

Odd pairs are resident, but it seems to prefer small swamps to the Birket Accrashi, where it was but seldom observed. Its well-known skulking habits make observation largely a matter of luck. Dr. Beven found four fresh eggs in a small marsh, south of the Pyramids, on 7 April, 1918; and Major F. W. Borman and myself found a nest, containing three incubated eggs, in the Wadi Natrûn, on 25 May, 1918.

215. *Gallinago gallinago gallinago*. Common Snipe.

Numerous on the Birket Accrashi, where it affords good sport, from September to March. Early arrivals have been noted on 14 August, and some few remain until early May.

216. *Hydrochelidon leucoptera*. White-winged Black Tern.

Small parties observed on the Birket Accrashi in spring and autumn. Noted on 30 April, 20 May, 27 August, 1 September, and 17 September. Examples were obtained in both winter and summer plumage. Numbers were observed in the Wadi Natrûn at the end of May 1918, but we found no trace of their breeding, although it looked a likely place. Captain Boyd records in 'The Ibis,' 1917, p. 556, having seen

Hydrochelidon hybrida (= *leucopareia*) at Abu Zabaal, but I never met with it there myself.

217. *Larus ridibundus*. Black-headed Gull.

Observed only twice at Abu Zabaal. Two seen together on 17 January, 1918, and a single bird shot on 30 December, 1917.

218. *Megalornis grus*. Common Crane.

On 30 April, 1918, I saw a large flock of Cranes flying over Abu Zabaal. They were going due north.

219. *Rallus aquaticus aquaticus*. Water-Rail.

There can be little doubt that this species is a resident in the vicinity of Abu Zabaal, but the good cover lends itself to the Water-Rail's skulking habits. I shot a specimen on 30 December, 1916, and have seen and heard it on numerous occasions, but never found a nest there. As a breeding-bird it is very common in the Wadi Natrûn, and Major F. W. Borman and I found three nests, with hard-set eggs, there on 27 May, 1918. These nests were all found within a hundred yards radius, and were in a dense reed-bed. They contained six, seven, and eight eggs respectively.

[This species nests at Inchas, and probably in many suitable localities in the Delta. My dates are: Two eggs, addled, 30.iii.10; five eggs, fresh, 15.vi.09; four eggs, fresh, 10.iv.10; so that it is probably double-brooded.—R. S.]

220. *Porzana pusilla intermedia*. Baillon's Crake.

In addition to the specimen mentioned below, as having been shot on 19 April, 1917, I only secured one more, namely, a bird shot on the Birket Accrashî, on 3 October, 1917. It is my opinion that both species breed in the Egyptian delta.

221. *Porzana parva*. Little Crake.

I first met with this species on 12 October, 1916, when I shot a specimen on the Birket Accrashî. I shot a second specimen there on 20 October, 1916, and on 28 December,

1916, a third on the old canal swamp near my quarters. During that winter, and throughout my stay in Egypt, I saw Crakes during each month of the year. (I shot a bird on 19 April, 1917, which was wrongly identified as a Little Crake. It was in breeding condition. On 5 August, 1917, when comparing skins in the Giza Museum, this bird proved to be *P. pusilla intermedia*.) I searched diligently for a nest, and on 29 April succeeded in finding one containing six eggs, fifty per cent. incubated. These I took to belong to *P. parva* at the time, but subsequent comparison by the Rev. F. C. R. Jourdain with a large series, proves them to be, in all probability, *P. p. intermedia*.

I could have made definitely certain, had I known at the time that any doubt existed, for, on 3 May in the same year, I caught two young Crakes alive in the same patch of reeds, and saw the parent birds creeping about several times, but refrained from destroying them. Efforts were made by the Giza Zoological Service to rear these chicks, but were unsuccessful.

I was never able to clear the matter up to my own satisfaction, but shot specimens of *P. parva* on 28 February and 26 March, 1917, in the same locality as that in which I discovered the eggs and young, and on the old canal swamp on 28 December, 1918. In the latter place I saw young Crakes on 19 May, 1918, but was unable to obtain an adult.

[At Inchas on 20. iv. 10 I shot a Crake, which Mr. Nicoll identified as *P. parva*, and I believe the skin is still in the Giza Museum. From the late date it ought to have been breeding, but I failed to find a nest.—R. S.]

222. *Gallinula chloropus*. Moorhen.

This species is a resident in suitable places, but is not very numerous at Abu Zabaal in the breeding-season. Its numbers are increased in the winter, at which season I often saw it.

I found incubated eggs at Inchas on 17 May, 1916, and also on 12 May, 1917, in the same locality. On 29 September, 1917, I shot a young bird, at Inchas, still unable to fly.

[A common breeding species at Inchas. Dates for fresh eggs varied from 15 May to 15 June in 1909. The largest clutch obtained was one of six.—R. S.]

223. *Porphyrio madagascariensis*. Green-backed Gallinule.

At the end of April 1919 I was at Kantara. A gang of natives were cutting down the reeds, and the corporal in charge of this anti-mosquito measure informed me that he had had some eggs brought to him the previous day, which, from his description, I think must have belonged to this species. Unfortunately, they had been destroyed. I certainly found the birds numerous in the immediate vicinity on the shores of Lake Menzaleh. I once saw Gallinules at Inchas.

224. *Fulica atra atra*. Coot.

Arrives in October, and remains at Abu Zabaal until March. In some winters very numerous, and in others comparatively rare. When shooting, on one occasion, I saw these birds in such numbers that two collided in mid-air, and both fell and were picked up dead.

225. *Coturnix coturnix coturnix*. Quail.

A few are resident, but are rarely met with. From 3 February to the end of March large numbers pass through, affording good sport. The second week in March marks the height of the migration at Abu Zabaal. Fewer birds are met with on their return flight in September. On 18 April, 1916, I took a clutch of eight Quail's eggs, in a field at Inchas. They were quite fresh. On 20 January, 1917, a native brought me three fresh Quail's eggs, which were all that were left of eight found in a nest, also at Inchas, and, when shooting there in May 1917, a single fresh egg was also brought to me.

[Fresh eggs were brought to me by a native in April, 1894, from Ayat, and two fresh eggs from Luxor, on 22 March, 1910. An oviduct egg with hard shell is unspotted and the colour of a pale English Partridge's egg.—R. S.]

226. *Ammoperdix heyi nicolli*. Nicoll's Desert Partridge.

I saw a single specimen near Gebel Asfur (south of the Birket Accrashi) on 28 November, 1917. I am familiar with this subspecies, having shot it on the Wadi Hof and the Wadi Resheid, near Helouan. A female shot in the the former Wadi, on 11 March, 1918, was within a fortnight of laying, and was flushed from under a large rock, which concealed, what Dr. Beven and I thought looked like the beginning of a nest. Several pieces of grass and a lot of plant-heads were gathered together, with a slight depression in the centre. Dr. Beven informs me that he obtained young birds, just on the wing, in the Wadi Resheid, at the beginning of May 1919. I hope these slight indications will help future observers in Egypt to discover the eggs of this interesting recently described Partridge.

ERRATUM.—On p. 249 line 11, *for Abbassia read Ibshawai*.

XXII.—*First Impressions of Tunisia and Algeria.* By
DAVID A. BANNERMAN, M.B.E., B.A., M.B.O.U., F.R.G.S.

(Plates II.—V.)

OF late years considerable attention has been given by British Ornithologists to the ornis of northern Africa. Lord Rothschild and Dr. Hartert have, by their exhaustive explorations in Algeria, made the birds of that fascinating country comparatively well known, whilst valuable supplementary notes have appeared from the pens of Messrs. Jourdain, Wallis, and Ratcliff. It is, therefore, with extreme diffidence that I present this short paper to the readers of 'The Ibis.' In the first place, it contains nothing new, and, in the second place, it is not the narrative of an Ornithological Expedition: it is merely the account of a journey through Tunisia and Algeria which some ornithologists have already made and doubtless many others will make in the future. It is to give these latter some idea of the birds they may expect to encounter, and of the scenery they will pass through, that I have ventured to publish my notes.

Field-glasses were substituted for the collector's gun, and much of my time—some eight weeks in all—was taken up in visiting the marvellous Roman and Punic remains of which northern Africa holds such a wonderful store.

We left Marseilles on a bitterly cold morning of February last, in the S.S. 'Duc d'Aumale'—the best steamer of the Compagnie Transatlantique plying between that port and Tunis. The voyage was calm but uneventful, and to my surprise neither Petrels nor Shearwaters were seen. The change in twenty-four hours from heavy clouds and chilly east winds to a cloudless sky and hot sun was as welcome as it was sudden ; and as we passed along the entire westerly coast of Sardinia within easy sight of the little white houses dotted along its cliffs, an interesting, though restricted, view of this island was obtained. From the sea it looked somewhat uninteresting, monotonous low hills succeeding one another until the more mountainous southern extremity of the island was reached.

In the early morning of the 4th of February we steamed past the ruins of ancient Carthage into the calm waters of the Bay of Tunis—up the canal which the French have ingeniously constructed through the lake to the prosperous capital of Tunisia. Tunis strikes the traveller immediately as being a thoroughly well-planned, well-administered town—the French have shown their wisdom in preserving intact the large Arab quarter, the souks and bazaars of which are probably without rival anywhere in the world. But it is of the impressions of an ornithologist that I wish to write, in the hope that others may be stimulated to follow the excellent example set by Mr. Joseph Whitaker and make Tunisia their "happy hunting-ground."

The town of Tunis is itself by no means a bad centre for the ornithologist ; many delightful excursions can be made, and highly-interesting localities visited within a short distance of the city. The electric train which runs to Carthage and La Marsa crosses and then partly encircles the wide Lac de Tunis—a broad sheet of water which has long been the haunt of the Flamingo (*Phenicopterus antiquorum*).

A glimpse of these fine birds standing knee-deep in the lake may often be enjoyed from the windows of the train, and the sight of a flock rising against the cloudless blue sky with the sunlight catching their rosy plumage is alone almost recompense for the long journey from England. The number of Coots (*Fulica atra atra*) on this lake is really astounding. They are absolutely tame here, and paddle about in hundreds within a few yards of the line.

Bordering the railway-track on the northern side of the lake is a low stone wall, the haunt of numbers of Redshanks (and doubtless other waders besides), which, usually shy birds in England, here do not even cease feeding as the train rushes by. Herons (*Ardea cinerea*) stand sentinel on the wall every hundred yards or so; Little Grebes (*Podiceps ruficollis*) in pairs swim about close to the shore exhibiting little more alarm than their companions; while out on the open water flocks of ducks skim over the surface, keeping, however, well out of gunshot of the shore. Like most salt or brackish lakes, the Lac de Tunis is absolutely devoid of vegetation around its shores, and in consequence those birds which do frequent its muddy margin are easily observed with field-glasses.

Quite apart from the wonderful Roman and Punic remains so skilfully excavated by Père Delattre, the environs of Carthage are well worthy of a visit for the sake of the birds which frequent this world-famous site. In the brilliant sunlight the fields are remarkably green in the month of February, and even the sea-cliffs present nothing of the barrenness usually associated with the north African coast in the minds of homedwelling ornithologists. From the young corn many Crested Larks* sprang up as we passed, gently quivering to earth with wings and tail fully extended, plainly showing the three pairs of dark tail-feathers contrasting with the pale outer and central pairs. Tunisia is, as Whitaker has said, *par excellence* the land in which to study these remarkably interesting birds, though doubtless Hartert would cite Algeria, and Nicoll Egypt, as

* The long-billed form of this district is *Galerida cristata carthaginiis*, the short-billed form *Galerida theklæ harterti*.

the countries where the burning questions associated with them may best be settled! Of the varied races of the Crested Lark known to inhabit Tunisia, I shall have more to say later: the country between Carthage and La Marsa is suited rather to Blackbirds, Thrushes, Chaffinches, Whinchats, Whitethroats, Grey Wagtails, Blackcaps, Black Redstarts, and Serin finches, all of which were noted in lesser or greater numbers on the walk along the cliffs. The Sparrows of Tunisia and Algeria have long been a source of perplexity to systematic ornithologists. Whitaker tackled the question in his delightful book ('Birds of Tunisia,' vol. i. pp. 203-204), and showed that the common Sparrow of the Regency was *Passer hispaniolensis hispaniolensis*, though *P. domesticus* inhabited the western districts and interbred extensively with the Spanish Sparrow: while in the south Sparrows which he referred to *P. italicus* were obtained. Hartert has discussed the status of the Algerian Sparrows at great length (Nov. Zool. xviii. 1912, pp. 479-482), and from his carefully considered observations we find that *Passer hispaniolensis hispaniolensis* occurs in Tunisia, as noted by Whitaker, but that the House Sparrow of Tunisia, which interbreeds so largely with the Spanish Sparrow, is *Passer domesticus tingitanus*, while the Sparrows from southern Tunisia (Gafsa) were named *fluckigeri* by Zedlitz, though they are in reality only hybrids, and are not therefore eligible for subspecific rank. These are the birds which Whitaker and others placed under the name *P. italicus*, though Whitaker pointed out that they were by no means typical examples.

An excursion of exceptional interest both to the ornithologist and the archæologist is to motor from Tunis to Dougga, the site of the most wonderful collection of Roman ruins in Tunisia. Dougga lies over 100 kilometres to the south-west of Tunis, and the excellent road passes through varied scenery. In the immediate vicinity of Tunis the country is very flat, a wide and remarkably fertile plain stretching for miles. Just after leaving the outskirts of the town a delightful view of the Sebkra es-Sedjourni is obtained from slightly rising ground. The lagoon which lies on the south-

west of the town is surrounded by a wide stretch of sand, or, rather, mud, and must be largely resorted to by Waders. We were too far from it to note what birds were about, but two Herons (*Ardea cinerea*) were recognised flying heavily from shore to shore, just as the sun was rising and tipping the distant hills with gold. In all directions the land was under cultivation, green with the young corn, or else in course of being ploughed up by teams of eight oxen. Crested Larks were here observed in great numbers, and as the car flew along many seemed to court death by dusting themselves in the road, escaping the wheels as if by a miracle. Quite a number of Lapwings were noticed, not in flocks but singly or two or three together, and all very tame, not attempting to stir as we passed. Corn-Buntings, Starlings, Sparrows, and Goldfinches were all numerous in flocks, particularly the Goldfinches (*Carduelis carduelis africana*). Brown Linnets (*Acanthis cannabina mediterranea*) were also seen, but not in such numbers. Gradually the aspect of the country began to change, green fields gave way to olive-orchards, where Blackbirds* and Thrushes were noted for the first time. Several Common Kestrels were circling overhead, and as we dashed over a bridge a pair of Southern Little Owls (*Athene noctua glaux*) darted out of an old olive-trunk. The road now began to ascend, and the slopes were everywhere thickly covered with scrub. Several Moorish Magpies (*Pica pica mauretania*) were here noticed, while the Algerian Shrike (*Lanius excubitor algeriensis*) was seen perched on the summit of a thorn-bush. As we gradually reached higher altitudes the sun was completely blotted out by many clouds which our chauffeur informed us always lay like a blanket over this particular part of the hilly countryside. Certainly it was unpleasantly cold, but as we neared Dougga the sun again flooded the landscape and lit up the truly wonderful ruins

* It does not seem to have been settled whether the Blackbird inhabiting northern Tunisia is *T. m. algerius*—the race which inhabits northern Algeria—or whether it is *T. m. mauretanicus*—the race which is found in southern Tunisia and southern Algeria; probably it will prove to be the former.

we had come to see. Surrounded by olive-trees, imposingly situated on the mountain-slope, from which a magnificent view of the adjoining country is obtained, the ruined Roman Capitol, Temples, and Theatre bear silent witness to the wonders of the Roman occupation. It was on the terraced steps of the Theatre that I made the acquaintance of one of the most delightful of Tunisian birds, Moussier's Redstart (*Diplootocus moussieri*), a male bird with his orange-brown breast and rump, black wings and head, and strikingly pure white frontal band, eye-stripe and alar patch, making a charming picture in such unique surroundings. Moussier's Redstart is a typically northern African mountain bird, and certainly reminds one more of a Redstart than a Stonechat. It is to be met with in both the northern and southern Atlas Ranges of Tunisia, Algeria, and Morocco. I found it myself both at Dougga and at Hammam Meskoutine in the northern Atlas in February, while Hartert and Rothschild record it from the southern Atlas Ranges during the breeding-season and from the northern Sahara in winter. It is common in the Aurès mountains of Algeria, and Whitaker notes that it is plentiful in the southern oases of Tunisia, leaving these districts in spring for the higher altitudes farther north. In the Moroccan Atlas this species is met with up to considerable altitudes, and Captain Lynes recently found it breeding commonly in the "Middle-Atlas" Range (Ibis, 1920, p. 296).

Birds were plentiful in the olive-groves of Dougga, Starlings and Thrushes (both winter visitors), Chaffinches, and Blue-Tits being observed. The former is a resident Tunisian subspecies (*Fringilla caelebs spodiogenys*), while the latter is the common north-west African race of the Blue Titmouse (*Parus caeruleus ultramarinus*). In some high cliffs close to Dougga a number of Rock-Pigeons were observed. As none were obtained, I cannot say to which race they belonged. Considering that the day was spent in examining Roman remains, the number of birds seen which could be identified without any doubt was distinctly encouraging, for of course a few others were noted which I dare not attempt to name.

Certainly more than one species of Lark and Pipit were seen, but who would dare to name a Pipit from a passing car ! The return journey to Tunis added no fresh species to my list, save a couple of Ravens flying high overhead. The Moroccan Raven (*Corvus corax tingitanus*) is an extremely abundant resident in Morocco, Algeria, and Tunisia. Once more we disturbed the Little Owls, which had returned to the same olive-tree from which we had already frightened them, and by 5 P.M. we were again in busy Tunis.

Two days after returning from Dougga I made, in company with the Editor of 'The Ibis,' a delightful trip by car to the Arab city of Kairouan, thence journeying south to El Djem, the most southern point we reached, and thence again to Tunis via Susa, an insignificant port on the coast.

Though birds were not the prime object of our journey, the expedition afforded us an opportunity of seeing for the first time (at any rate as far as the writer was concerned) a number of interesting species, and we obtained a good first-hand knowledge of the varied types of country through which we passed. Whitaker, in the Introduction to his 'Birds of Tunisia,' notes that "Tunisia has been divided by geographers into three natural divisions or regions, each of these differing from the other two in its climate, hydrography, and topography, and consequently in its flora and fauna." In the excellent map provided in his book these three regions are differently coloured, and the divisions can thus be seen at a glance. Whereas Tunis itself lies at the north-east of the northern division, the towns we set out to visit are all situated in the central division, that which lies between the Atlas Mountains and the southern region of the Chotts and deserts.

It was not until we had passed through the broken chain of mountains, which run in a north-easterly direction from El Oubira to Hammamet, and had gained the great plains which stretch almost uninterruptedly to Kairouan, that we noticed the change in the avifauna. North of the mountains we had seen only the usual species which frequent the more fertile parts of the Regency, such as Goldfinches, Brown

Linnets, Corn-Buntings, innumerable Sparrows, Starlings, etc., but once the semi-desert plains with their scrubby vegetation were reached, these lovers of cultivated lands were left behind, and instead we saw Common Cranes, Sand-Grouse, Bustards, and close to Bdj el Menzel, near a sheet of water, innumerable small wading birds which, however, we were quite unable to identify from the car. Crested Larks* were again numerous, but other small birds were seldom seen, save an occasional Shrike or so. Cranes flying in small parties over the scrub, or else standing in little groups on the plain feeding unconcernedly within a few hundred yards of the car, made a charming picture, especially as we had somehow never expected to meet them. According to Whitaker the Common Crane is abundant in Tunisia in winter and during migration, and is then to be seen in large flocks close to Tunis and Carthage. We had not, however, seen any in the northern part of the Regency during our brief visit. It has not been known to breed in Tunisia, but, curiously enough, the Demoiselle Crane (*Anthropoides virgo*), though quite a rare species in Tunisia, has been known to breed near Susa.

We passed close to Sebkra Kelbia, a great expanse of water which looked very much out of place in this flat and otherwise arid landscape. These inland lakes are very remarkable, and must surely be the haunt of vast numbers of waterfowl at certain seasons of the year. From the nature of their position, surrounded by the open plain, and their entire lack of undergrowth, birds resting on the surface would be quite unapproachable from any direction. To explore thoroughly these vast plains and Sebkras it would be necessary to take a tent and camp, the distances being too great to work the ground conveniently from the nearest French hostelry, though much good work could certainly be done by a naturalist staying in Kairouan itself. The climate of Tunisia is delightful, the rain-fall, particularly in the central and southern divisions of the Regency, very small, and we may take Mr. Whitaker's word for it that "as a

* Probably *Galerida theklae superflua*, but none obtained.

country for caravan-travel and nomad-life the Tunisian Regency is perhaps unrivalled." No naturalist, however narrow his interest may be, can fail to be delighted with his first impression of Kairouan, up till the entry of the French in 1881, one of the four sacred Mohammedan cities, through the gates of which none but the followers of the Prophet durst enter. Kairouan is a town of purely Arabic type, surrounded by a remarkably high wall. With its beautiful domed Mosques and towering minarets, and its entirely unspoilt appearance, this wonderful white city has an atmosphere which it is quite impossible to describe, but which grips one from the moment its ancient gates are entered. Wandering through the streets we often encountered Arabs hawking large bunches of Starlings for sale, evidently netted close to the town and eaten largely by the natives. The loathsome practice of bird-liming is also carried on here, and we saw a number of miserable Corn-Buntings being tortured by their thoughtless youthful captivators in the streets of the town and we hastily put them out of their misery. Many of the Arabs keep cage-birds, the African Goldfinch being evidently the favourite, though Blackbirds were also seen and occasionally Turtle-Doves.

On our way to the "Mosque of the Barber" we were interested to see a Southern Little Owl (*Athene noctua glaux*) perched on a tomb in the Arab Cemetery, quietly sleeping in the blazing sun. Within a short distance of the Owl the white hunched-up figure of an Arab rocked in prayer, but the bird seemed undisturbed by the proximity of the droning voice. Our Mohammedan guide told us that the "Booma"—as they call the Little Owl—was a very wicked bird at whose door many vile charges are laid. The bird, he explained, would attack young babies the moment the mother's back was turned, and by swiftly pecking the child's forehead would cause its death unless prevented in time! This astounding story was evidently implicitly believed in by the narrator, and as he had witnessed such a deed "with his own eyes" it would have been but waste of time to question its authenticity!

The Southern Little Owl is abundant throughout Tunisia, frequenting both the olive-groves of the north and the deserts of the south. Unlike the Scops Owl (*Otus scops scops*), which we did not meet with, but which, according to Whitaker, is found frequently after the end of March, the Little Owl is often to be seen in the day-time, as I had already proved for myself.

From the minaret of the Great Mosque a magnificent view of the surrounding country is obtained, and we then realised how isolated this once sacred town really is. On all sides stretched the great plain, not reddish or golden as the Sahara, but uniformly brown save where the crops were shooting through the sunburnt soil, stony in nature and partially covered with plant-growth or camel-grass. This was unquestionably the country of the Crested Lark, and, indeed, save for an occasional Hawk or Harrier, the landscape was otherwise singularly devoid of bird-life.

The Crested Larks of Tunisia have been dealt with at length by Mr. Whitaker in his book, and the members of the genus found in Algeria have been reviewed by Dr. Hartert in *Nov. Zool.* xviii. 1912, pp. 488-496.

Of the long-billed form *G. cristata*, Whitaker recognises only two subspecies, *arenicola* (a pale race) and *macrorhyncha* (a darker race), but he does not give the exact range of these two forms in the Regency : *macrorhyncha*, he notes, inhabits country where "plains and large tracts of level country appear . . . and where plains adjoin or are not far distant from mountains"; *arenicola*, on the other hand, is said by Whitaker to be confined to the inland semi-desert districts of the centre and south of the Regency, not extending north of the Atlas, or even (as far as he was aware) to the sea-coast"—Whitaker found it plentiful on the plains west of Gafsa and on the dry salt marshes of the Chott district.

Since Whitaker published his book, Kleinschmidt and Hilgert have turned their attention to the long-billed Crested Larks of Tunisia, naming, between them, three forms. They showed that the bird which Whitaker referred to as *macrorhyncha* from northern Tunisia was distinct from the

Algerian bird and required a new name, and they proposed to call it *G. c. carthaginis* (Klein. & Hilg. Orn. Mon. 1905, p. 188: Tunis). In this they seem to have been quite correct.

The bird which Whitaker referred to as *arenicola* they apparently split up, naming those from Gabés to Gafsa *Galerida cristata gafsæ* (Orn. Mon. 1904, p. 189: Seggi), while the birds from the region of the Chott el Djerid (Tozer, Douz, Kebilli) they named *Galerida cristata reichenowi* (Orn. Mon. 1905, p. 189: Kebilli). Hilgert, in his Catalogue of the Erlanger Collection, 1908, pp. 102-104, again reviews these Larks and upholds the three names.

Hartert, in his Vog. Pal. Faun. vol. i. p. xxvi, footnote, states that he considers both *gafsæ* and *reichenowi* to be synonyms of *arenicola*, which he evidently believes to range from the line El Kantara-Touggourt-Bledet-Ahmar in Algeria eastwards through the deserts of southern Tunisia.

The British Museum is singularly deficient in Crested Larks from Tunisia and Algeria, but the few we have at our disposal does not prove Hartert to be wrong! It certainly appears to me that the long-billed Crested Larks from the extreme south-east corner of Tunisia (a district cut off from the rest of the desert country by a range of mountains—the Djebel Matmata) is distinct and requires a name, but as we have not sufficient material from this region, I shall refrain from giving it one for the present. Birds from Tatahouine appear to be much more rufescent in colouring than either so-called *reichenowi* or *gafsæ*.

Of the short-billed group Whitaker recognised four forms in Tunisia: (a) *Galerida thekla major*, (b) *G. t. superflua*, (c) *G. t. deichleri*, (d) *G. t. carolinæ*.

Three of these names still hold good, but the bird which inhabits the north of the Regency extending to the Atlas Mts. which Whitaker called *G. t. major*, we now know by the name of *G. t. harterti*—the same form which is found in the north of Algeria. Mr. Whitaker notes that the bird found at the higher elevations is still darker than his *major*, so that there may be yet another form.

G. t. superflua, according to Whitaker, inhabits the central division of Tunisia and the less desert-like districts of the south.

G. t. deichleri is an isabelline form which inhabits the semi-desert inland country of southern Tunisia and does not occur apparently north of Gafsa, while *G. t. carolinæ* is a rufous form inhabiting the rocky inland plains of the south-east of Tunisia.

Until we have a very large series from Tunisia of these Larks we cannot add anything to the distribution as given by Mr. Whitaker in his 'Birds of Tunisia.' It seems desirable to ascertain the range of each particular form of both the long-billed and short-billed Crested Larks with more precision than has been done in the past. A list of actual localities from which the various races have been obtained would greatly help in defining the territory inhabited by the six races up to now described. Dr. Hartert and Lord Rothschild have already carried this out as regards the Algerian species and subspecies.

As I did not collect any Larks I can add nothing to the discussions which have already taken place, but should I return to Tunisia I shall certainly obtain a series wherever I go. That representatives of both the long-billed (*Galerida cristata*) and short-billed (*Galerida thekla*) species are very abundant I can testify from the tour I took in the northern and central parts of the Regency, and I did not enter the southern desert zone at all, where the Larks are of even greater interest than those from the north.

Tunisia is indeed a wonderful country for Larks of many species. Apart from the several forms of Crested Lark (of which there are at least six and possibly more), Whitaker enumerates no fewer than fifteen other species and subspecies belonging to the family Alaudidæ; the genera *Alamon*, *Chersophilus*, *Alauda*, *Ammomanes*, *Calandrella*, *Melanocorypha*, *Rhamphocorys*, and *Otocorys*, all being represented by one or more forms. Unquestionably there still remains good work to be done in determining the exact range of these birds, particularly as regards the members of the genus *Galerida*.

Two nights were spent in Kairouan, and from there we travelled south over the vast plain passing the great salt lake Sebkra Sidi-el-Hani, and thence in a south-easterly direction to El Djem. Quite a number of Cranes were seen on this part of the journey, but little else of interest save the ever present Larks. El Djem boasts a railway station, a small but quite comfortable hotel, an exceedingly filthy Arab village, and the finest monument left by the Romans in Tunisia, an Amphitheatre, colossal in size and wonderfully well preserved, rivalling the Colosseum in Rome. The Amphitheatre is evidently the breeding-place of numerous Rock-Pigeons (*Columba livia*) and many Kestrels. Six or eight of the latter could be seen soaring above the ruin, or else busily engaged in nesting preparations on the highest remaining tiers. Near the Arab village, I remarked a Crested Lark with exceptionally pale sandy-coloured plumage, but as I did not obtain it, I will not venture to give it a name. One would not expect to find either of the true desert forms so far north as El Djem. The first part of the route from El Djem to Susa passes through much the same type of country, the same desert aspect and the same paucity of bird-life as observed between Kairouan and El Djem. As we neared the latter town the landscape quickly changed, rolling olive-clad hills, broken up by deep nullahs, succeeded the plains, and the birds of the orchards at once made their appearance: Turtle-Doves were seen for the first time, as well as Blackbirds, Thrushes, Buntings, Warblers, etc.

Staying the night at Susa, we returned to Tunis by the coast-road. From what I saw of the north I am sure a tour in the south—Gabés, Sfax, Gafsa, Nefta, etc.—would prove of exceptional interest, especially to anyone attracted, as I am, by desert scenery and desert fauna and flora. A very pleasant trip, and one which would give the traveller an excellent insight into desert life, would be to travel from Gabés—a port on the south-east coast of Tunisia—by train or car to Nefta, and from there by camel caravan into Algeria via El Ouëd and Touggourt, whence the railway would bring him to Biskra in nine hours. While at

Tunis I had, with Mr. Selater, the pleasure of meeting Monsieur Lavauden, a French ornithologist, who is in charge of the "Woods and Forests" department of the Government in Tunisia. Mons. Lavauden has an excellent knowledge of Tunisian birds, and gave us much interesting information on the subject; he has compiled a most useful little brochure on the Tunisian birds, which is noticed in the last number of 'The Ibis' (*cf.* p. 326). Mr. Selater also visited Mons. Blanchet, a local naturalist of considerable repute, whom I regret I did not have the pleasure of meeting. Both these gentlemen would, I feel sure, be willing to give unstintingly of their ornithological knowledge to any members of the B. O. U. who may chance to visit Tunisia.

Shooting restrictions in Tunisia are much simpler than in the adjoining country of Algeria. Firearms may be taken into the country so long as they are declared at the port of arrival. Gun licences cost under two francs, and only a small tax is charged on the importation of loaded cartridges.

In the south game is said to be plentiful, the widely distributed Dorcas Gazelle (*Gazella dorcas dorcas*) and Loder's Gazelle (*Gazella leptoceros loderi*), as well as the Addax Antelope (*Addax nasomaculatus nasomaculatus*), with its fine spiral horns, being found. The ordinary shooting-season lasts from the middle of August, at which early date few sportsmen will be tempted to brave the blazing sun of the plains, until the end of February; while doubtless the season would be extended for anyone collecting for scientific purposes, the French authorities looking with a friendly eye on all such pursuits.

We left Tunis with deep regret in the early morning of February 16th, travelling by train into Algeria. Our destination was Hammam-Meskoutine, which took eleven hours to reach, but the magnificent scenery through which the line passes prevented any thought of tedium. Passing at first through fertile valleys, olive-clad slopes, and then bare hills, the scenery becomes grander as the higher altitudes are approached, often skirting, often crossing and

re-crossing the great bed of the Medjerda river, the course of which the line follows for a considerable distance; the train gradually ascends until surrounded on all sides by a tumbling mass of mountains clothed at the highest points with magnificent forests of Cork and Evergreen Oaks.

I do not know whether any ornithologist has ever worked in this country, but I can imagine no more suitable district for studying the mountain and forest fauna than that just described, particularly when the Tunisian-Algerian boundary has been crossed. The stretch of mountain scenery between Souk-Ahras (2297 ft.) and Aïn-Tahamimine (1100 ft.), which reaches at Laverdure an altitude of over 2500 ft. with mountains of 4150 ft. towering above, is incomparably beautiful. Eagles on more than one occasion were seen, one bird flying for some distance parallel with the train and almost within gunshot of the carriage. Owing to the sun I was unable to get a satisfactory view of its plumage, but I believe it to have been the Golden Eagle, which is found sparingly throughout the northern Atlas Mountains of Algeria and generally throughout the more mountainous parts of Tunisia.

The line now gradually descends, and as we neared Hammam-Meskoutine the country opened out, olives once more clothed the slopes, and in every direction the country bore a highly prosperous and luxuriant appearance.

Hammam-Meskoutine or The Baths of the Petrified, as its name implies, from an ancient Arab legend, is charmingly situated from an ornithologist's point of view. The hotel and farm buildings are almost the only houses in sight. In the pretty courtyard, round which the hotel is built, palms, orange and lemon trees are the haunt of numerous Dusky Bulbuls (*Pycnonotus barbatus barbatus*), the first we had met with. Redbreasts (*Erithacus rubecula* subsp.?) hopped about under the shade of the trees, a Grey Wagtail (*Motacilla cinerea cinerea*) frequented the irrigation stream, and innumerable Sparrows filled the air with their noisy chatter. Lord Rothschild and Dr. Hartert paid particular attention to the Sparrows at Hammam-Meskoutine and

collected a large series here. Typical examples of both *Passer hispaniolensis hispaniolensis* and *P. domesticus tingitanus* were obtained by them, and their remarks on the intergrading of these two forms as observed at Hammam-Meskoutine will be found in Nov. Zool. xviii. 1912, p. 480. I had the advantage of having a copy of this paper with me, and with the aid of my powerful field-glasses was able to match from live birds under my observation quite a number of the Sparrows' heads depicted in Pl. xi. of the paper cited. The Redbreasts puzzled me somewhat. They appeared very pale-breasted, but then I am used to watching the fine *Erithacus rubecula superbus* of certain of the Canary Islands, with its rich coloured breast. Mr. Jourdain believed that most of the Robins which Mr. Wallis met with at Hammam-Meskoutine in 1910 were migrants from Europe. Dr. Hartert, in addition to many typical specimens, shot an example of *E. r. witherbyi* at this place in February 1911. I confess I am unable to tell this race apart in life.

So many ornithologists have worked in this district that the birds of the neighbourhood are now comparatively well known. A short description of the surrounding country may, however, be of interest to those who have not seen it for themselves. Hammam-Meskoutine lies in the northern Atlas range at a height of 1312 ft. In the vicinity of the hotel the country is very open, and in February wonderfully green, the wide valleys are everywhere sown with corn, the lower hill-slopes covered with grass for grazing or planted with olive-trees, which in some directions cover the hillsides as far as the eye can reach. Hot springs bubble up in many places, and the water, which issues from the ground at a temperature of 205° F., finds its way through a tangle of luxuriant vegetation down the bed of the valley, its course clearly visible by the constantly rising steam. Great clumps of palm-trees grew luxuriantly in these valleys, their presence appearing somewhat incongruous in this typically park-like landscape (Plate II. fig. 1). On all sides mountains rise in the distance, covered closely with scrub four or five feet in height, or else bare save for the scant coarse grass which



1. A typical landscape, Hammam-Meskoutine.



2. The Oued bou Hamdane, Hammam-Meskoutine.

gives a patchy appearance, resembling from a distance a well-burnt Scottish moor.

Every day for two weeks I rode over these hills on the excellent little Arab horses to be hired at the hotel, or else explored the river-bed of the Oued bou Hamdane (Plate II. fig. 2), in places almost dry save for two or three narrow channels easily fordable at almost any point.

No matter what direction is taken birds are everywhere really plentiful. Close to the hotel, in the thick undergrowth of the valleys and on the olive-clad slopes, we observed Greenfinches (*Chloris chloris aurantiiventris*) in small numbers almost every day, Chaffinches (*Fringilla cœlebs africana*), numerous Blackbirds (*Turdus merula alpirus*), Song-Thrushes (*Turdus philomelus philomelus*), Redbreasts (apparently *Erithacus rubecula rubecula*), Dusky Bulbuls (*Pycnonotus barbatus barbatus*), Brown Linnets (*Acanthis cannabina mediterranea*) in small flocks, and Goldfinches (*Carduelis carduelis africana*) in considerable numbers, Starlings (*Sturnus vulgaris vulgaris*) in huge flocks, Sparrows, Corn-Buntings (*Emberiza calandra calandra*), Blue Titmice (*Parus caeruleus ultramarinus*) very few, Blackcaps (*Sylvia atricapilla atricapilla*) rather rare, Sardinian Warblers (*Sylvia melanocephala melanocephala*), and Kestrels (*Cerchneis tinnunculus tinnunculus*).

On the more rocky ground, covered with grass, small scrub, and olives, the Barbary Partridge (*Alectoris barbara barbara*) is plentiful. All were paired by the time I arrived on the 17th of February. In the reeds of the dry river-bed I caught a hasty glimpse of a Warbler, but am uncertain of the species to which it belonged. Birds of Prey were nearly always observed once the higher ground had been reached. Most commonly seen was the Golden Eagle (*Aquila chrysaetus*). On the 25th of February I saw three together sailing majestically along the hillside, whilst another eagle, observed on one occasion only, was, I believe, Bonelli's Eagle (*Entolmaetus fasciatus fasciatus*), a bird with which I am unfamiliar. Bonelli's Eagle is recorded by Messrs. Wallis and Jourdain (Ibis, 1915, p. 157) as breeding at

Hamмам-Meskoutine in February 1906, and the species was seen by the former observer in 1910 and 1912 in the same locality. Hartert also records Bonelli's Eagle (Nov. Zool. xviii. p. 534) from the same place, so that I feel pretty sure of my identification.

Irby's Raven (*Corvus corax tingitanus*) was also occasionally seen in pairs.

Crested Larks are very plentiful on the cultivated lands, and they seem to love particularly the grassy strips left on either side of the dusty main roads. It is a dark race, as might be expected, which frequents this district, known as *Galerida theklæ harterti*.

I can only add two species (by name) to the list of Hamмам-Meskoutine birds recorded by Rothschild, Hartert, Wallis, and Jourdain, one being Moussier's Redstart (*Diploptocus moussieri*). On two occasions I saw a male of this unmistakable species, once close to the "Petrified Arabs," the huge cone-shaped deposits of calcareous tufa, which are such a remarkable sight close to the boiling waterfall, and a single bird was seen on higher ground when Mr. Selater and I were out riding on the 21st of February. The other bird, which I believe has not previously been seen, though Hartert heard it, was the Barn-Owl. Just as we were leaving on the 26th of February, my attention was called to a tree in the hotel garden in which a number of Bulbuls were making a tremendous noise. On approaching I found they were mobbing a Barn-Owl, which, I believe, from its very white breast, to have been *Tyto alba alba*. The Bulbuls were keeping a very respectful distance from their unwelcome visitor, extending their tails and wings, which they kept in a constant state of motion, while twittering and scolding incessantly. The Barn-Owl is evidently a rare bird in Algeria. Only once did I see a bird during my stay at Hamмам which really puzzled me. I was forcing my horse along a mountain path in the direction of Roknia, through particularly thick scrub, when I saw something running under a bush. Pushing the horse towards it off the track, I managed to flush a bird, which might have been a glorified quail. It





The Gorge of the Rummel, Constantine.

certainly had no tail to speak of, and had very rounded wings, dark upper parts, not a particularly long bill, and the legs were not visible. It seemed quite dazed by the sun, and with slow almost butterfly-like flight dropped into the bush again some 20 feet from me, whence I failed to dislodge it. It was *not* an Owl as has been suggested. It might have been a short-legged Rail, but what a curious place in which to find one! In size it reminded me of a young Partridge on the 1st of September.

Quite a number of birds recorded by other ornithologists were not seen by me at Hammam-Meskoutine, as, for instance, the Hawfinch (*Coccothraustes coccothraustes burryi*), noted by Hartert, and met with by Mr. Wallis abundantly in March and April 1911, the Golden Oriole (*Oriolus oriolus oriolus*), recorded by Wallis on 1st March, and Hartert on 20th May, the Serin (*Serinus canarius serinus*), recorded by Wallis on 21st April, and by Hartert in February, the Siskin (*Carduelis spinus*), seen by Hartert in February 1911. The Common Chaffinch (*Fringilla cælebs cælebs*) was seen in this district by Hartert, as well as *F. c. africana*, but all those observed by me belonged to the latter North African race. The African Rock-Bunting (*Emberiza cia africana*), recorded by Wallis in April, was absent, and a long list of other species including a number of birds of passage, all of which will be found enumerated in the two papers cited. No true migrants were observed, Swifts, Swallows, and Martins were conspicuously absent, and members of the Warbler family were remarkably scarce. The great rush to Europe had not yet commenced.

Hammam-Meskoutine is indeed a splendid centre from which to gain a first-hand knowledge of the birds of the more mountainous parts of northern Africa. We left this interesting district on the 26th of February, making our way west to Constantine, a town about which much has already been written. The line passes close to the rugged Djebel Taya, famous as the habitat of the North African Bearded Vulture (*Gypaëtus barbatus barbatus*). Constantine enjoys a unique position on a hill surrounded on three sides by the

wonderful Rummel Gorge (Plate III.), varying in places from 330 to 690 ft. in depth and from 230 to 550 ft. in breadth. Its precipitous sides are the breeding-place of countless numbers of Lesser and Common Kestrels, Jackdaws, and Rock-Pigeons. It is, as Dr. Hartert has, I think, already said, one of the few places in the world where one may stand in a busy thoroughfare and gaze down upon all these birds soaring below, and maybe a Peregrine Falcon will be seen, as I had the luck to see one, dashing under the great suspension bridge (551 ft. in length and 671 ft. above the river) which leads to the hospital; Egyptian Vultures and Ravens were also seen in the Gorge, and later in the season it is frequented by numerous Alpine Swifts, which, however, had not arrived by the 3rd of March. All round the top of this gorge runs a fine carriage drive, from which is obtained one of the finest views imaginable. To the west and north-west stretches a tremendous valley backed as far as the eye can reach with mountains. Whether viewed under the merciless rays of the noon-day sun, or during the softer lights at sunset, the panorama is exceedingly beautiful. Pallid Swifts had not yet made their appearance, but on the 1st of March a number of House-Martins, which were certainly not there on the previous days, were seen flying up to their old nests under the eaves of a public building on the ramparts. I counted the nests on this building, and I found 91 old, but for the most part habitable, nests on the front alone. The building had a frontage of 93 ft., two feet of which were occupied by water-pipes. At the back there were 90 nests at least, and on one of the sides 15, while on the other side the architecture did not allow of one nest to be built. The total was the prodigious number of 196 nests on only a moderate-sized building. On the hillside east of the town lies a small forest of fir-trees singularly devoid of bird-life on the day of my visit, while below the River Rummel winds through the wide valley towards El Guerrah, the junction of the line to Biskra. Constantine will live in my memory, not only for the unique Rummel Gorge and the marvellous views obtained from the ramparts, but also for the remarkable



White Storks on their nests in the Arab Town, Constantine.

number of White Storks (*Ciconia ciconia ciconia*) which make their home in the Arab quarter of the town. On the picturesque old red roofs of the houses which rise in tiers to the north-east of the bridge of El Rached (Plate IV.), I counted as many as forty Storks sitting or standing by their great nests, while a number of others were flying overhead, their long necks and legs stretched out to their full extent. This, of course, is the usual position in which the Stork flies, but I have also seen them wheeling overhead at a considerable altitude with their legs drooping down, as if preparatory to alighting. Unmolested by the Arabs, the Storks of Constantine add greatly to the already wonderfully picturesque Rue Perregaux, from various points of which the great birds and their nests may be observed at close quarters.

In the early morning of 3rd March we left Constantine for Biskra by the now well-known tourist route to the oasis on the fringe of the desert. At this early hour numerous Storks were seen in the fields, busily feeding; at Kroubs, where they were particularly numerous, I noticed four huge nests built in one small tree bare of leaves, which hardly appeared large enough to support one such ungainly structure. Between Ain M'lila and Ain Yagout the train traverses an immense flat stony plain, for the most part covered with grass, to the west of which rugged limestone hills rise abruptly. Lapwings, Starlings, Larks, and great numbers of Sparrows were constantly seen from the train. East of the line the distant mountains were white with snow. Several shallow salt-lakes were passed surrounded by rough, rush-covered ground with here and there inviting pools, where a great many small wading birds were observed.

The line runs close to the Salt Chotts Tinzilts and Ez Zemoul absolutely bare of vegetation around their edges. To my disappointment not a bird was to be seen. On the 20th of February, thirteen years previously, Dr. Hartert found on the former sheet of water many Ducks, a few Gulls, and hundreds of Flamingoes. The station, "Les Lacs," is on the very edge of the lake, and as the train pulls up there for a few minutes and then sweeps round one side

of Chott Tinzilts, birds, if present, could not escape notice. Backed by distant snow-capped mountains, the blue expanse of water, surrounded by low, absolutely barren, reddish-tinted hills, made a singularly attractive picture, and only needed the Flamingoes to complete the scene.

Beyond "Les Laes" great plains stretch to El Mahder, covered when not under cultivation with camel grass, where numerous large flocks of Starlings (*Sturnus vulgaris vulgaris*) were observed. Considering the poor quality of much of the soil, the extent of land under cultivation is really remarkable. As we neared Batna the mountains, still deeply capped with snow, increased in altitude, and were, as we soon discovered, thickly clothed with forest and scrub; the forest covers a large area as seen from the train alone, and consists, I believe, chiefly of cedar mixed with oak.

Batna, which is also the home of a great number of White Storks, is perhaps the best centre from which to explore the Aurès Mountains. It was from here that Dr. Hartert set out to ascend Djebel Mahmel, the type-locality of Seeböhm's Wheatear (*Enanthe enanthe seebohmi*), whilst the oak woods above Lambèse may be conveniently worked from that place. Between Batna and Biskra the train carries one past varied scenery—first through a wide valley flanked on either side by hills thickly covered with cedar forest, known as the Forêt d'Ichali, then through plains partly cultivated, partly grazing land, but with every kilometer the vegetation becomes more scanty and less green than farther north. By the time Tamarin is reached the country has already taken on quite a desert aspect. Close to the little station, where pomegranates, apricots, and tamarisks—the fruit-trees in full blossom—seemed to be almost the last sign of cultivation, six Common Cranes were seen in a field. South of Tamarin, barren undulating hills, cut up by dry nullahs, heralded the approach of the desert, and soon the line ascended into wild mountainous country, where the rugged hills were clothed only with the scantiest of plant-life. There was not a tree in sight, not even a nomad's tent. We were now close to the famous gorge of El Kantara, and eagerly scanned the

sky for a chance sight of a Bearded Vulture (*Gypaëtus barbatus barbatus*).

Just before the gorge is entered the train pulls up at the station of El Kantara. Ornithologists are recommended to make a stay at the Hôtel Bertrand, which has been built in a picturesque position almost in the mouth of the gorge itself. Apart from the possibility of seeing the Bearded Vulture, the great cliffs of the Djebel Metlili and the immediate ranges east of El Kantara are the breeding-place of Egyptian Vultures (*Neophron percnopterus percnopterus*), Golden Eagles (*Aquila chrysaëtus*), and Bonelli's Eagles (*Eutolmæus fasciatus fasciatus*), African Buzzards (*Buteo ferox cirtensis*), Algerian Lanner Falcons (*Falco biarmicus erlangeri*), Black Kites (*Milvus migrans migrans*), and probably other accipitrine birds as well, a sufficiently interesting collection to entice most ornithologists to break their journey to Biskra at this favoured spot. Many other birds, other than birds-of-prey, may be seen in the neighbourhood of El Kantara, and a week at least can be comfortably spent there, even if time is pressing.

Many pens have doubtless attempted to describe the swift passage from the dark towering precipices of El Kantara and the grandeur of the Aurès Mountains to the solitude and glare of the great Sahara. Truly has the gorge been called the Gate of the Desert. As the train approaches the apparently solid wall of rock, as viewed from the station, a glimpse is caught of a turbulent boulder-strewn stream rushing through the narrow pass and lined on either bank with palm and fruit trees; above rise the great jagged cliffs, throwing everything far and wide into shade. The train winds in and out of three short tunnels, between which fascinating glimpses of the palms and bed of the rushing torrent are obtained. Suddenly the wall of cliff ends, and in a flood of light one gazes down upon a sea of waving palm-trees, and beyond the infinite space of the desert.

Over the great plain of El Outaïa, the forecourt of the Sahara, entirely encircled by mountains, the train slowly winds its way, stopping for a short while at the village and

palm oasis from which the plain takes its name. Both Kites and Kestrels were seen in the neighbourhood, the former doubtless the Black Kite (*Milvus migrans migrans*). The huge expanse, flat as a billiard-table save for the intersecting dry watercourses, is absolutely bare and sandy, partly covered with small stones and partly cultivated, patches of exceedingly green corn standing out in striking contrast to the drab desert soil. This is the home of many interesting birds—the Calandra Lark (*Melanocorypha calandra calandra*), the Algerian Desert Lark (*Ammomanes deserti algeriensis*), Hilgert's Crested Lark (*Galerida thekla hilgerti*), the Western Russet Wheatear (*Enanthe hispanica hispanica*), the African Black Chat (*Enanthe leucura syenitica*), the Pied Chat (*Enanthe lugens halophila*), and several other desert birds which I found there on future visits.

The plain takes some time to cross, but gradually we drew near to the low range which obscures the view of Biskra and the true desert beyond. Running parallel with the course of a wide river-bed, the line passes through a cutting in the Chaîne du Sfa, and as we emerged from the hills the great oasis of Biskra came into view, with a single white tower standing conspicuously above the palms and cypresses. To the east and west the Aurès Mountains recede into the distance, while to the south stretches the immeasurable golden desert, broken only by lines of dark green marking other oases on the horizon—and so the edge of the Sahara is reached at last.

Three delightful weeks were spent in the oasis exploring the neighbourhood. For a naturalist arriving at Biskra for the first time, there is so much to see, and so much to do, that the time slips away before half is accomplished. Dr. Hartert had kindly instructed me where to go and what to look for, and armed with his paper "Ornithological Explorations in Algeria" (ex Nov. Zool. xviii.), with Mr. Jourdain's "Notes on the Bird Life of Eastern Algeria" (Ibis, 1915), Whitaker's 'Birds of Tunisia,' and Witherby's 'Practical Handbook of British Birds'—the last-named invaluable for the identifying

of migrants—I found Biskra and its environs all that its admirers had claimed for it. From our comfortable quarters in the Hôtel du Sahara we were able to make easy expeditions in many directions—on horseback, in carriages, on camel, or on foot. Thus the plain of El Outaïa is within easy reach, also the sand-dunes, the stony desert, the sandy desert, the bare rugged hills, and the wide bed of the Oued Biskra, the extensive palm-groves of Vieux Biskra, the wonderful garden of Count Landon, each holding their own particular birds, only a cursory knowledge of which can be obtained in a three weeks' visit. Later in the season (we left Biskra on the 24th of March) the oasis is full of migrants passing on their long journey north. On March 13th I met a French sportsman returning with four or five couple of Quail, which he had shot in the fields on the outskirts of the oasis--the first arrivals of the season, so he informed me. By the third week in March, Swallows and House-Martins had become common, frequenting particularly the Oued Biskra and the cornfields on the outskirts of the oasis. The young palm-groves were teeming with Warblers, apparently on passage; but of other migrants, such as Bee-eaters, Rollers, Swifts, and Redstarts, none had yet arrived. Had we remained another month we should doubtless have found them in numbers. Rock-Martins were, however, observed in one place only, half a dozen of these birds flying round the old watch tower, built on a commanding rock near the entrance to the town. Hartert records them from near Biskra in February, March, and April.

The birds of Biskra and its neighbourhood have been so thoroughly studied by Lord Rothschild, Dr. Hartert, and others, that I can add nothing whatever to their exhaustive work. On 16th March we left for Touggourt—an Arab market-town of considerable importance 132 miles south of Biskra. The comfortable train, running twice weekly, takes from 8 A.M. until 4.30 P.M. to cover the distance, but the leisurely journey gives one ample time to study the topography of the real desert, so unlike the Sahara as seen in our childhood's picture-books! A great part of the way

from Biskra to Touggourt the desert was partially covered with plant-life—heavy rains had fallen, and the result was abundantly manifest. The formation of the myriads of tiny sand-mounds which dot the plain, through the agency of the bushes *Limoniastrum*, *Salsola*, etc., has already been ably explained by Dr. Hartert, and even from the carriage windows it is evident that these little hillocks are the centre of the animal life of the desert. The line passes within view of the Chott Melrir and Chott Merouan, and the sight of these vast sheets of water alone upsets one's preconceived idea of the Sahara. Unfortunately, now that it is no longer necessary to spend three or four days over the journey, the ornithologist must not expect to get much idea of the bird-life ; he will not, for instance, catch a glimpse of *Galerida theklae deichleri*, the pale Crested Lark which is found on the stony patches amidst the sandy desert, nor of *Ammomanes phœnicura arenicolor*, of *Eremophila alpestris bilopha*, or even of *Alamon alaudipes alaudipes*, the Bifasciated Lark which occurs, we know from past explorers, in the sandy parts of the desert and even on the bare dunes. To see these birds in their home-surroundings the journey must be made on camels, as Lord Rothschild and Dr. Hartert have always done in the past. The remarkable spectacle of a whirlwind of powdered saltpetre was witnessed at one point during our journey, when the train was passing over a plain glistening white as freshly fallen snow, the surface being encrusted with crystallized nitre. This part of the desert lies considerably below the level of the sea. Two or three days were spent at Touggourt, and from there my wife and I rode on mules to Temacin and Zaouia, taking mint tea at the latter village with the renowned Marabout who had entertained Lord Rothschild and his party in 1909.

Between Touggourt and Temacin the desert is of a very different nature from that farther north ; much of the way leads through sand-dunes (Plate V. fig. 1), where only *Galerida cristata arenicola* was observed. Large tracts of the desert, particularly where the sand is hard, are covered with pieces of gypsum, which sparkle in the sunlight like pieces



1. The Desert, nearing Temacin.



2. The Oasis of Temacin, Algerian Sahara.

of glass. Temacin and Zaouia are well worth a visit, as they are purely Saharan villages of very considerable interest. They give one a splendid idea of what a Saharan oasis really is like. Arab life and customs are here quite untouched by French influence or tourists, which can not be said of Biskra or even of Touggourt. Birds were very scarce in Temacin and Zaouia, with the exception of one or two White Wagtails, and Palm-Doves, which were numerous, walking about on the flat roofs of the mud-built houses and also in the streets. A wonderful view of the desert is obtained from the minaret of the Mosque at Temacin (Plate V. fig. 2), the immense dunes lying between Touggourt and El Ouéd being plainly visible, while three sheets of water appear not so very far away.

After a journey such as this into the desert, the bird-life at Biskra strikes one as being remarkably plentiful—Siskins, Blue-Tits, Saharan Buntings *, Blackbirds †, Hoopoes, Warblers, Wagtails, Swallows, Martins, Sparrows, and Palm-Doves enlivening the oasis, not to speak of the Wheatears, Chats, and innumerable Larks which can be found in the surrounding desert within ten minutes' walk of the principal hotels. It was therefore with great regret that we finally left Biskra on the 24th of March for the town of Algiers. Crossing the plain of El Outaïa, two Cranes and a Black Kite were seen, the former evidently on passage, but the latter breeds in the neighbourhood. An even better view of the Gorge of El Kantara is obtained when approaching it from the south, the remarkable folds in the strata of the hills to the west of the gorge arresting the attention from a long distance : again no Vultures were in sight, but fourteen Irby's Ravens were wheeling in great circles overhead. As we climbed once more into the wild country lying immediately north of the gorge, the mountains were lit up by a magnificent sunset and their barren slopes turned to gold and red and purple, a desolate but grand panorama impossible to describe. To what a different

* *Emberiza striolata sahari.*

† *Turdus merula mauritanicus.*

scene we awoke next morning. The train was nearing Algiers, rushing through the most luxuriant countryside, woods carpeted with wild flowers, orchards in blossom, vineyards, acres of waving corn, and fields which looked greener than those in southern France! Goldfinches and Chaffinches and many woodland birds were seen on all sides; everywhere there were streams swollen beyond their banks. The town of Algiers—even if one stays at Mustapha Superieur—is not in itself a convenient place from which to observe bird-life. Although the pine-woods at the back of Mustapha seemed full of the common species, and Greenfinches, Chaffinches, Goldfinches, Corn-Buntings, etc., were observed in some numbers in the neighbourhood, the district is too populated to be really of much interest to the ornithologist. Two Cuckoos were seen and heard in a pine-wood close to the hotel on 27th March—the first we had met with during our travels, and the only true birds of passage noted. Our last excursion was to the Ruisseau des Singes and the grand Gorge of Chiffa, a delightful drive, especially in the early spring. The views of the mountains were superb, and soon after entering the deep gorge, two great birds, which may have been Griffon Vultures, were observed sweeping along the mountain side many hundred feet above us, but at too great an elevation to identify. Three Kites were also seen at very close quarters just before we reached the gorge mouth. The apes which swarm on the mountain side, close to the little hotel, have become extraordinarily tame and come down in numbers—old males, females, and young—to be fed by the excursionists who make this naturally secluded spot their goal on a holiday. The sight of the apes running all over the roof of the hotel and climbing from balcony to balcony, entering the bedrooms whenever a chance occurred, did not inspire us to remain for the night, and we forthwith returned to Algiers.

The following day, 29th March, we sailed for Marseilles in the S.S. 'Tingad,' full of regrets at leaving this wonderful country of forests and orchards, mountains and deserts.

XXIII.—*Notes on the Birds of Alderney.*

By Major W. R. THOMPSON, R.A., M.B.O.U.

FOR much of the information contained in the following notes I am indebted to my friend, that good sportsman, Major L. J. A. Langlois, of the Royal Alderney Artillery and Engineers. Without his aid they would have been far less full, and more especially are my thanks due to him for that valuable table giving the date of arrival on the island of the first Woodcock.

Langlois has lived and shot, or I should rather say, shot and lived—he himself would put the shooting first—in Alderney since 1885, and has at his house, “Holmwood,” a small but well set up collection of many of the rarer visitors—birds, not human beings—to the island. I make further acknowledgement of his assistance in the text, where, since his name would perforce appear so frequently, I have denoted him by his initial “L.”

My own observations of the avifauna of the island commenced on the date of my first joining the station in November 1912, and continued, with intervals, until the 1st of August, 1914, when, owing to the imminence of war, the Garrison Company in which I was then serving left the island. I was again posted to Alderney in 1918, and landed on the 8th of November, since when my observations have continued to the present time, July 1920, with the all important exception of a period of six weeks during the autumn migration of 1919, when I had the misfortune to be away on duty.

The Island of Alderney will be found fully described in the guide books, but a few remarks from an ornithological view-point are perhaps called for. The island, then, is situated in latitude $49^{\circ} 43'$ North and longitude $2^{\circ} 12'$ West. It is the most northerly of the Channel Islands, and lies about nine miles in a westerly direction from the nearest point on the coast of France, Cap de la Hague, on the Cotentin Peninsula. From the point of view of migration it is the

most important of this group of islands, and prior to the construction of the Alderney Lighthouse was, by all accounts, of even greater interest. The Alderney Lighthouse, first opened in 1912, lies at the eastern end of the island, and its value to the seafaring community at large is exemplified by the almost total cessation, since its construction, of the very numerous shipwrecks which formerly took place here, but since "one man's meat is another man's poison," it may be remarked that the islanders are the poorer for being deprived of that part of their livelihood which was closely connected with the afore-mentioned wrecks—at least so tradition has it.

And as an ornithologist I can to some extent sympathise with them, inasmuch as, whatever be the exact explanation, it appears certain that, since the Alderney Light came into use, the stream of migration has been somehow diverted and does not now pass so closely to the island as formerly, with the result that far fewer birds of passage are observed.

Many theories have been advanced to account for this change, but so many new lights have been constructed along the coasts of France and England, that it may be due to one or a combination of these, or even to a cause quite unconnected with any of them, but one interesting theory I have heard, and which may have something in it, is as follows. Before the Alderney Light was constructed, the only light in the immediate neighbourhood was that of the Casquets, and, since Alderney lies in a direct line between the nearest point on the French coast and the Casquets Light, it has been thought that the flights, on leaving the Continent, were attracted by the nearest light and, passing immediately over Alderney, many individuals were induced to land and rest there, and *vice versa* on their return journey. They are now attracted by the Alderney Light on the extreme eastern end of the island, and thus, for the most part, miss the land altogether.

Alderney itself is a very small island some $3\frac{1}{2}$ square miles in area. Its greatest length from east to west is $3\frac{1}{2}$ miles, and its average width about one mile. Its southern

and western seaboard are high and rocky, the cliffs being rugged, much broken, and very picturesque. The height of these cliffs varies from 230 feet to nearly 300 feet near Telegraph Bay, their highest point. They fall almost vertically into the sea, and there is, consequently, little or no foreshore exposed on this side of the island at low water, with the exception of Longy Bay, at the eastern termination of the cliffs, where a comparatively large extent of sand and seaweed-covered rocks is uncovered as the tide recedes, affording feeding grounds for many Waders, principally Oyster-catchers and Turnstones.

From the high southern edge a plateau generally extends towards the interior of the island, and then falls away gradually to the northern shore. The main harbour and roadstead are on this side, the coast being here, for the most part, of sand and shingle, with here and there outcrops of granite forming bold forelands in miniature between the sandy bays. The western end and elevated interior of the island are mostly under cultivation, fields being separated by loosely built stone walls, or rubble and stone banks, the interstices in which form convenient nesting places for some of the smaller birds. These walls and banks are of no great height, and are generally out of repair. A similar wall runs along the greater part of the western and southern edges, "divides the desert from the sown," and leaves between it and the edge of the cliff a space some hundreds of yards in breadth of rough stony land overgrown with furze, bracken, bramble, heather, and coarse grasses.

The eastern end of the island lies low and is unfit for cultivation by reason of its rocky and sandy nature; it is overgrown with weeds, coarse grasses, and furze.

The island contains no river, but here and there small streamlets of fresh water are found. Most of the disused stone quarries hold water, and near Longy Bay is a pond filled with rushes.

The island is almost destitute of trees, but there are some rather fine ones in the vicinity of St. Anne's, which, however, it is to be regretted, are in process of being cut down by the

inhabitants for use as firewood, and it is hoped that legislation will step in to preserve those remaining.

Included with Alderney is the small islet of Burhou, about $1\frac{1}{2}$ miles distant and separated from it by the passage known as the Swinge, through which, at spring tides, the current sets with great violence. There are also several outlying rocks of which the most notable are the Casquets, the Ortac, the Garden Rocks, and Coque Lithou. Both Burhou and the above mentioned outlying rocks are exceedingly difficult to approach owing to the strong and uncertain currents, and can only be visited in calm weather.

Owing to the propinquity of the French coast many birds pass to and fro at will in both winter and summer, either as the spirit moves them or as the weather conditions dictate, so that a species which is very numerous one day may be absent or almost entirely absent on another, and for this reason it is sometimes very difficult to discriminate accurately between a resident and a bird of passage.

Very little appears to have been written on the ornithology of Alderney. 'The Channel Islands,' by Ansted and Latham, published in 1862, contains a list of birds purporting to be found in Alderney, but, admirable as this work undoubtedly is in other respects, it can scarcely be looked upon as an authority on ornithology, if only by reason of the Editor's remarks in his preface, where he states: "The Editor not being conversant with the details of Botany and Zoology, has sought and obtained the assistance of many friends and acquaintances."

The next book in point of time would appear to be 'The Birds of Guernsey and the neighbouring Islands of Alderney, Sark, Herm, Jethou,' by Cecil Smith, published in 1879. This book appears to be reliable and is very interesting reading. Although now very out of date in many respects, it still remains the text-book on the subject.

In the autumn of 1898 the island was visited by Dr. W. Eagle Clarke, and his observations on the birds appeared in 'The Ibis' for April 1899. He remained but a week, and

the number of birds noticed by him in this short period is remarkable, even allowing for the fact that the autumn migration was in full swing ; but a week is far too short a period on which to form conclusions, and the habit of many species, as noted above, of passing across the Race from the French coast to the island and *vice versa* at will, appears to have led him into some wrong assumptions with regard to the relative abundance of different species.

Corvus corax. The Raven.

The bird is a resident, and a pair may usually be met with along the shore or cliffs, attention being probably first attracted to them by their well-known harsh cry.

At least one pair breed here, and in February 1914 I visited a nest which contained six eggs. It was a pleasure to find that the same nest was still being occupied in 1920. The bird also breeds in Guernsey where, in 1909, I visited a nest. It contained five nearly fledged young ones, and I was induced to take one as a pet. It was an interesting and amusing bird, and no trouble so long as it had sufficient food ; but eventually its appetite grew to such an extent and it did so much damage in the garden, by biting off the young shoots and buds, that I gave it to the Brighton Zoological Gardens, where, however, it did not live long.

Mr. Cecil Smith, writing in 1879, was of opinion that the bird did not breed on any of the islands. He says: "The Raven can now only be looked upon as an occasional straggler. I do not think it breeds at present in any of the islands, as I have not seen it anywhere about in the breeding season since 1866, when I saw a pair near the cliffs on the south end of the island (Guernsey) in June ; but as the Raven is a very early breeder, these may only have been wanderers." Mr. Eagle Clarke saw three Ravens in Sark on the 29th of September, 1898, which he concluded, and no doubt rightly, were residents. It would therefore appear that the Raven is not only holding its own, but actually increasing in numbers, at any rate locally.

Corvus corone. The Carrion-Crow.

A very common resident, and becoming more so. It is to be found nesting on the low trees on the island, but more commonly, owing no doubt to the scarcity of trees, it nests on the outlying rocks, often close to the ground and not far above high-water mark. Curiously enough it does not appear to make much use of the safer situation afforded by the high cliffs of the southern shore, although a few pairs do nest there. The birds are more numerous in the autumn and winter months, but this may be due to the young birds remaining with the family until the approach of the next breeding-season, when they probably depart to make a home for themselves elsewhere. These birds are very bold during the breeding-season and frequently take toll of young chickens.

Corvus cornix. The Hooded Crow.

I saw one of these birds on the 20th of November, 1918, and a flock of ten—the largest number I have seen together on the island—on the 30th of October, 1919, and another on the 15th of November, 1919. L. tells me he sees some during the month of October every year, and that they usually arrive just before the first Woodcock, their appearance being looked upon by the islanders as an indication that Cock may be expected. Several Cocks were shot on the day after I had seen the flock of ten Crows mentioned above. Mr. Cecil Smith says: "The Hooded Crow can only be considered an occasional autumnal and winter visitant—Mr. MacCulloch writes me word that the Hooded Crow is a very rare visitant, and only, as far as he knows, in very cold weather; and, he adds, it is strange that we should see it so rarely, as it is very common about St. Malo." Neither Langlois nor myself, with the exceptions of the two birds mentioned above as seen in November, and which I prefer, owing to the extreme mildness of the season, to regard as late migrants, have seen this bird in Alderney during the winter months, even in hard weather, and it must therefore, at present, be considered as a bird of passage only, although

there would appear to be no reason why it should not be met with in winter. I have no record of it in the spring.

Corvus monedula. The Jackdaw.

This bird breeds here and is a resident, although not common outside the breeding-season, and frequently almost entirely absent. Those which breed here arrive, doubtless from the adjacent French coast, in the early spring, when for some days a flock of perhaps twenty or thirty birds may be seen performing evolutions in the air, at intervals returning to ground, and evidently reconnoitring the cliffs for a suitable nesting-place. After the breeding-season they disappear except for a few isolated individuals, the flock appearing again at uncertain intervals during summer and winter, to depart again after a few days' visit.

Pica pica. The Magpie.

I have not observed this bird myself on the island, and it must be considered as a rare visitor only, the absence of high trees and tall undergrowth no doubt accounting for this.

L. saw three of them together in about the year 1900, but is uncertain of the date. He also saw three in September 1919, and tells me that during the hard winter of 1870 they were very numerous, and that many were caught and kept as pets by the islanders.

The bird is fairly common in Guernsey.

Pyrrhocorax pyrrhocorax. The Chough.

Mr. Cecil Smith writes: "In Sark the Choughs have by no means so easy a time, as the Jackdaws outnumber them about the cliffs, and will probably eventually drive them out of the island; indeed, I am afraid they have done this in Alderney, as I did not see any when there in the summer of 1876, nor in this last summer (1878). I, however, saw some there in previous visits, but now for some reason, probably the increase of Jackdaws, the Choughs appear to be nearly, if not quite, to have deserted the island." This is, and probably will remain, the last record of the Chough in

Alderney, and it disappeared from the cliffs of the Dorset coast opposite not many years later. I have been unable to obtain any record of its having been seen here by the "oldest inhabitant," although the bird is one not difficult to describe. However, we may yet hope to record Choughs in Alderney, as I see in one of our latest works—'A Practical Handbook of British Birds'—the Channel Islands are given as a habitat for it, and in 'British Birds' for February 1920, one is recorded by Mr. H. B. Baillie as having been seen by him in Guernsey on the 22nd of April, 1919.

Sturnus vulgaris. The Starling.

A common resident, but less common in summer than winter, when their number is largely increased by arrivals from overseas.

Chloris chloris. The Greenfinch.

This bird is a resident in small numbers and breeds here, but a large proportion of the residents appear to leave the island for the purpose of breeding, owing probably to the limited number of suitable hedgerows, returning again in July and the rest of the summer and wintering here. Its numbers are also temporarily increased in spring and autumn by birds of passage. It is more common some years than others.

Coccothraustes coccothraustes. The Hawfinch.

Mr. Tourgis, of Alderney, has in his possession a stuffed specimen, which was shot on the island by Mr. R. Herival.

Mr. Cecil Smith, writing in 1879, states: "The bird-stuffer and carpenter in Alderney had one spread out on a board and hung up behind his door, which had been shot by his friend who shot the Greenland Falcon, in the winter of 1876-1877, somewhere about Christmas."

Carduelis carduelis britannica. The British Goldfinch.

The bird is resident in small numbers and breeds here. As a bird of passage it occurs in fair numbers in spring and autumn.

Passer domesticus. The House-Sparrow.

A common resident. Its numbers appear to remain constant throughout the year. Less numerous than in most parts of England.

Fringilla cœlebs. The Chaffinch.

A resident breeding here, but its numbers are greatly increased during the winter months by migration.

Mr. Eagle Clarke, who visited the island in September, 1898, for about a week, considered it decidedly uncommon—a mistake due doubtless to his short stay, when possibly the main body was on one of its periodical visits to the French coast.

Acanthis cannabina. The Linnet.

A common resident. Its numbers are increased during the winter months by migration, and as a bird of passage it is in some years extremely numerous for a few days or weeks, according to circumstances, most probably the weather conditions. In the spring of 1919, from the 1st to the 5th of May, after a continuance of very cold north winds, large flocks were present on the island. I estimated these flocks to contain many thousands of individuals.

Pyrrhula pyrrhula pileata. The British Bullfinch.

A scarce resident, at least one pair breeding here, and I have occasionally met with it at irregular intervals in both summer and winter. At times it appears to be entirely absent, probably visiting the French coast. This is the only record I can find of the occurrence of the Bullfinch in Alderney, and the inhabitants do not appear to have noticed it. As I write (7th of July, 1920) a family of recently fledged young ones are not far away, the nest, which I found with eggs in the middle of May, having fortunately escaped the attention of the boys.

Emberiza calandra. The Corn-Bunting.

L. has shot five on the island, one in the autumn of each of the following years :—1892, 1893, 1894, 1896, and 1911.

It is not a resident, so that those shot must have been migrating, and it may probably best be considered as a rare bird of passage. I have not myself observed it. L. has one of the five birds mentioned above in his collection.

Emberiza citrinella. The Yellow-Hammer.

This bird has so far defeated me, and I can only conclude that it has disappeared from the island in recent years, as I have never come across it. Mr. Cecil Smith, writing in 1879, says: "The Yellow-Hammer, though resident and breeding in all the islands, is by no means so common as in many parts of England. In Alderney it is perhaps rather more common than in Guernsey, as I saw some near the Artillery Barracks this summer, 1878, and Captain Hubbach told me he had seen two or three pairs about there all the year."

Mr. Eagle Clarke reports it as being common in Alderney in September 1898, and L. tells me that he has frequently found it nesting here.

Emberiza cirius. The Cirl Bunting.

I killed a specimen of this bird on the 24th of December, 1913. It was at the time feeding on a dust-heap, in company with a mixed flock of linnets, sparrows, and chaffinches. I also observed it on the following occasions, when it was doubtless on migration to the south coast of England, where it breeds:—

20th of April, 1914—a flock of about twelve.

22nd of April, 1914—several in my garden.

23rd of April, 1914—one near Fort Tourgis.

I have not seen it during the summer months, and do not think it breeds here, but on the 21st of January, 1919, I noticed one or two amongst a number of Rock-Pipits, so probably it occasionally winters here. Mr. Cecil Smith, writing in 1879, says of this bird: "I have never seen the Cirl Bunting in any of the islands, nor has it, as far as I know, been recorded from them, which seems rather surprising, as it is common on the south coast of Devon, and

migratory, but not numerous on the north coast of France, so it is very probable that it may yet occur." Mr. Smith's prophecy has been realised after a lapse of thirty-four years.

Plectrophenax nivalis. The Snow-Bunting.

Mr. Cecil Smith states: "Captain Hubbach writes me word that he shot three out of a flock of five in Alderney in January 1863."

Alda arvensis. The Sky-Lark.

A common resident. Its numbers are, however, augmented during the winter months by migration.

Motacilla alba. The White Wagtail.

Four birds of this species settled in my garden on the evening of the 15th of March, 1919, having evidently just arrived from overseas. They were fairly numerous on the 24th of March, 1919, after which I saw none until the 6th of April, when I observed a single individual. It is a bird of passage.

Motacilla lugubris. The Pied Wagtail.

I have met with this bird at rare intervals in both summer and winter, so I think it must be looked upon as a scarce resident, although I have not found it nesting here. As a bird of passage it is not uncommon. Mr. Eagle Clarke found it quite common in September 1898.

Motacilla cinerea. The Grey Wagtail.

As a winter visitor this bird is not uncommon, and during this period single individuals can almost always be met with if searched for along the numerous small streams. I have never seen it here in the summer.

Motacilla raii. The Yellow Wagtail.

Is very common as a bird of passage, especially during the spring migration, but is also a summer visitor, a few pairs remaining to breed every year, more having remained this year (1920), I think, than usual. During the spring of 1919 the migration of all birds was much delayed by bad weather, and a flock of these birds passed over the island, going north, as late as the 7th of May.

Anthus trivialis. The Tree-Pipit.

Mr. Cecil Smith, writing in 1879, says of this bird: "A very numerous summer visitant to all the islands, breeding in great numbers in parts suited to it."

I found this bird to be common on migration during the latter part of August 1920. I obtained one on the 23rd of August, 1920.

Anthus pratensis. The Meadow-Pipit.

A common resident. I do not think its numbers are much, if at all, increased by migration.

Anthus petrosus. The Rock-Pipit.

A common resident, more common than the last species. It breeds on all the outlying rocks, as well as the main island. I do not think its numbers are increased by migration.

Certhia familiaris britannica. The British Tree-Creeper.

I constantly observed a single individual of this species throughout the winter of 1919-1920, and hoped that it would remain to breed, and I even put up a nesting-box for its accommodation, but in the spring, instead of being joined by a mate, it disappeared.

Regulus regulus. The Golden-crested Wren.

I have only noticed this bird on one occasion—on the 2nd of November, 1919. On this date I saw three in my garden, and there were doubtless others, but it was towards evening and getting dark. I only noticed the first one by almost stepping on it amongst some weeds which I was pulling up. Poor little birds, they appeared to be quite done up after a week of strong cold north-east winds.

I went to the house for a butterfly-net, and had no difficulty in catching one for identification, thinking it might be the Fire-crest, after which I let it go.

Mr. Eagle Clarke saw many of these birds on the island on the 25th and 26th of September, 1898, and L. tells me that it is usually very numerous as a bird of passage; but I

think few have occurred since the severe winter of 1916-1917, when there were so many casualties.

Parus major newtoni. The British Great Tit.

A common resident breeding here, but more numerous outside the breeding-season and especially in winter. Like so many of the other residents, and doubtless owing to the restricted area of the island, the majority are absent from the island during the breeding-season. Throughout the whole of the autumn and winter of 1919-1920 there was a quite abnormal number of these birds about, and a few were nearly always in sight, in fact it must have been almost the commonest bird on the island, but nearly all departed on the approach of spring.

Parus cæruleus obscurus. The British Blue Tit.

A scarce resident. Its numbers are not noticeably affected by migration.

Lanius excubitor. The Great Grey Shrike.

L. shot one of these birds on the island in 1888, and has it in his collection. This is, I think, the only record of this bird for the island.

Ampelis garrulus. The Waxwing.

Mr. A. C. Tourgis, of Les Chevaliers, Alderney, has one of these birds in his collection. He shot it at Rose Farm, Alderney, in the autumn of 1897.

Sylvia communis. The Whitethroat.

A common summer visitor, and bird of passage. Considerable numbers remained to breed in 1920.

Sylvia curruca. The Lesser Whitethroat.

I have only noticed this bird in small numbers as a bird of passage. Doubtless it occasionally remains to breed, as there are many suitable places for it.

Sylvia simplex. The Garden-Warbler.

Not uncommon during migration, especially in some years. I have not found it breeding here, nor have I seen it during the summer months.

Sylvia atricapilla. The Blackcap.

Occurs regularly as a bird of passage. The males were very numerous here on the 6th of May, 1919, but, as already remarked, the spring migration was much delayed that year.

Acrocephalus scirpaceus. The Reed-Warbler.

In the 'Channel Islands,' by Ansted & Latham, Mr. Galliene in his remarks accompanying his list of Birds of the Channel Islands, says:—"I have put the Reed-Warbler as doubtful for Guernsey, but I have seen a nest of this bird found at Alderney." I have not myself seen this bird and do not think it now breeds here.

Phylloscopus trochilus. The Willow-Warbler.

A common bird of passage. I have not found it breeding here.

Phylloscopus collybita. The Chiffchaff.

A common bird of passage, a few generally remaining to breed. A few individuals wintered here during 1919-1920, and so it must also be looked upon as a scarce resident.

Turdus viscivorus. The Missel-Thrush.

Common in winter during cold weather. L. tells me that he has found it nesting here, but I think it has almost, if not quite, ceased to do so, as I have not observed it during the breeding-season.

Turdus musicus clarkii. The Song-Thrush.

A common resident.

Turdus iliacus. The Redwing.

Common in winter during cold spells, or continuous strong north-east winds. At other times not often seen.

Turdus pilaris. The Fieldfare.

As in the case of the last species, it is common during cold weather or strong north-east winds, but unlike that species, it does not disappear so quickly on the weather moderating, and a few may usually be met with throughout the winter, even in mild weather.

Turdus merula. The Blackbird.

A common resident, being slightly more numerous than the Thrush.

Turdus torquatus. The Ring-Ouzel.

L. tells me that these birds are usually common during the autumn migration, arriving towards the end of September and remaining about a month. Dr. Eagle Clarke noticed it here in September 1898, and it appears to be more numerous in autumn than in spring. I saw one near my house on the 20th of April, 1919.

Phœnicurus phœnicurus. The Redstart.

A common bird of passage.

Phœnicurus ochrurus gibraltariensis. The Black Redstart.

A few generally winter on the island, but I saw none here last winter, and think that it was absent that year (1919-1920).

Erithacus rubecula melophilus. The Robin.

A common resident. I do not think its numbers are at all affected by migration.

Saxicola rubicola. The Stonechat.

A common summer visitor, a few remaining through the winter, and therefore also a scarce resident. I shot one on the 10th of December, 1913.

Saxicola rubetra. The Whinchat.

A bird of passage in small numbers. I have only noticed it during the spring migrations, and do not think that it ever remains to breed, although there seems to be no reason why it should not do so. Mr. Eagle Clarke saw it here in September 1898.

Œnanthe œnanthe. The Wheatear.

A common bird of passage and a summer visitor, many remaining to breed.

Accentor modularis. The Hedge-Sparrow.

A common resident. I do not think its numbers are at all affected by migration.

Cinclus cinclus britannicus. The Dipper.

Mr. Cecil Smith states in regard to this bird: "Captain Hubbach writes me word he saw one in Alderney in the winter of 1861-1862." This is the only record of this bird, and I do not think it now occurs.

Troglodytes troglodytes. The Wren.

A common resident. I do not think its numbers are affected by migration.

Muscicapa grisola. The Spotted Flycatcher.

A common bird of passage. I do not know that it ever remains to breed.

Muscicapa atricapilla. The Pied Flycatcher.

A few occur annually as birds of passage. Mr. Eagle Clarke records one in "female" plumage, as seen by himself and his friend Mr. Laidlaw in the island on the 27th of September, 1898.

Hirundo rustica. The Swallow.

A common summer visitor.

Delichon urbica. The Martin.

Mr. Cecil Smith says of this bird: "It is spread over all the islands, but confined to certain spots in each. In Alderney there were a great many nests about Scott's Hotel and a few more in the town." None of these birds are breeding here this year (1920). I have been round the whole town and carefully inspected Scott's Hotel, and there is no sign of a nest, nor are there any birds about. Unfortunately I did not pay much attention to this bird last year, but do not think it bred, as otherwise there should be some sign of the old nests under the eaves of the houses. I cannot understand why it should not breed here, as conditions appear suitable, and it is a common bird of passage. This year a large flock remained several weeks on the island, and indeed did not depart until the 24th of May, when they all left together.

Riparia riparia. The Sand-Martin.

A common bird of passage. It never remains to breed ; there are no suitable nesting-places for it.

Dryobates sp. ? The Spotted Woodpecker.

L. tells me that a Spotted Woodpecker, either the Great or Lesser, was shot here in November 1891, by a Mr. Levens, who has left the island. Unfortunately it does not appear to have been preserved.

Iynx torquilla. The Wryneck.

A common summer visitor. As Mr. Cecil Smith says, its numbers vary considerably in different years. It is particularly numerous in Alderney this year, and at present (the middle of July 1920) the young may be met with along almost any wall or hedgerow.

Cuculus canorus. The Cuckoo.

A common summer visitor, more numerous than I have anywhere seen it in England. Its numbers vary in different years. In 1919 it was unusually numerous.

Micropus apus. The Swift.

A very common summer visitor, breeding numerously, not only in the old forts and houses on the island, but also in the cracks and crannies of the sea-cliffs.

Caprimulgus europæus. The Nightjar.

Occurs annually as a bird of passage in both spring and autumn. I have not found its nest, but it probably breeds here, as one or two may be seen at intervals throughout the summer.

Merops apiaster. The Bee-eater.

L. has one in his collection. It is a male bird, and he obtained it in his garden on the 18th of May, 1917. This is, I think, the only record of it for Alderney.

Upupa epops. The Hoopoe.

Mr. Cecil Smith says of this bird : "I have one obtained in Alderney in August, though I have not the exact date,"

neither does he give the year, but it must have been prior to 1879, when his book was published. I have not myself seen it here, nor does anyone seem to have preserved a specimen ; but I have several notes of its occurrence, and as it is a bird that cannot well be mistaken, and as I obtained the records from good observers, I think they are worth giving. L. has seen two on the island, one in September 1910, and the other about the year 1877. He tells me that the late Mr. R. G. May, of Alderney, once shot one here. Mr. Nicholas Gaudion tells me that he shot one back in the seventies, but he has not the exact date.

Alcedo ispida. The Kingfisher.

Before the war the Kingfisher was a not uncommon bird on the island, and one or two could always be seen in winter around the cliffs or fishing from the rocks. It was also present during the summer months, though less numerous, and I have little doubt it occasionally nested here. During the last two years, however, I have not seen a single specimen, nor do I know of anyone who has, and it seems to have quite disappeared ; it is hoped not permanently.

Mr. Eagle Clarke found it not uncommon during his visit in September 1898.

Flammea flammea. The Barn-Owl.

A resident, but by no means common. L. has two in his collection, and tells me he has shot four in all, and has observed it on several other occasions. I had noticed one of these birds about all last summer and located the hole occupied by it, but it was not easy of access and I did not visit it, although I felt pretty certain it was breeding there. This year, however, seeing it in the same vicinity, I determined to clear up the question, and, with the aid of a rope, descended to the hole. No sooner had my feet come opposite the hole than a barn-owl left it and disappeared round a corner, and on looking into the hole I saw three young ones, two nearly fledged and the other much younger and about half the size of the other two. This, I think, is the first record of the Barn-Owl breeding in Alderney. Date of visiting nest, 18 July, 1920.

Asio otus. The Long-eared Owl.

A bird of passage, but by no means common, and so far only noticed in the autumn. L. has one in his collection and has shot four of them—one in the autumn of each of the following years, 1893, 1899, 1900, 1904. Bearing in mind how seldom even our common residential owls are seen, the fact of this species having been observed on four occasions in twenty-seven years, whilst passing through the island on migration, argues that it is of frequent occurrence as a bird of passage, and is probably a regular visitor. It is curious how seldom this bird is noticed during the spring migration. It usually occurs here in November, so it would appear to be a late migrant at this period. I have not myself seen this bird.

Asio accipitrinus. The Short-eared Owl.

A common bird of passage and also a winter visitor, but the numbers remaining for the winter months vary considerably in different years. As a bird of passage it occurs more frequently in the autumn than the spring. L. tells me he once shot a specimen here in August.

Circus æruginosus. The Marsh-Harrier.

L. has two in his collection—a male and a female. He shot the male on the 21st of August, 1899, and the female the following day.

Mr. A. C. Tourgis also had a young male in his collection. He shot it here about the year 1894.

Circus pygargus. Montagu's Harrier.

Mr. Cecil Smith says of this bird: "Miss C. B. Carey records one in the 'Zoologist' for 1873 as having been shot in Alderney in July of that year. She adds that it was an adult male in full plumage, and that she saw it herself at Mr. Couch's shop."

The above is the only record I have for this bird.

Buteo buteo. The Buzzard.

L. tells me he shot one in the autumn of 1886.

The only other record for the occurrence of this bird in

Alderney that I can find is contained in the following quotation from Mr. Cecil Smith's book : "The Buzzard is a tolerably regular, and by no means uncommon, autumnal visitant, specimens occurring from some of the islands almost every autumn. But it is, I believe, an autumnal visitant only, as I do not know of a single specimen taken at any other time of year, nor can I find a record of one. I have seen examples in the flesh from both Alderney and Herm, in both of which islands it occurs at least as frequently as it does in Guernsey, though still only as an autumnal visitant." I do not think it ever visits the island at the present time.

Buteo lagopus. The Rough-legged Buzzard.

Mr. Cecil Smith, in his book, states that on his visit to Alderney in June 1878, he found one of these birds at the bird-stuffer and carpenter's shop there which had been shot in Alderney about two years previously. I have no other record of this bird.

Haliaëtus albicilla. The White-tailed Eagle.

L. has one in his collection, which he shot on the 7th of November, 1887. It is a young bird and said to be a male, though its measurements scarcely bear this out—3 feet 2 inches, across wings 7 feet 6 inches.

On the 2nd of November, 1871, a specimen was shot by a Mr. Edwards and is now set up in Scott's Hotel. This is no doubt the bird spoken of by Mr. Cecil Smith—at all events the dates coincide.

On the 26th of October, 1899, one was shot by Mr. A. C. Tourgis on Burhou, the measurements being the same as the 1887 specimen mentioned above. Mr. Tourgis has it in his collection.

In the autumn of 1908 one was shot by Mr. T. Simon of Alderney.

It is, I think, a not uncommon occasional visitor to the island in autumn and winter, but owing to the fact that it keeps principally to the outlying rocks and Burhou, it is not often seen. During the autumn and winter months, owing to the danger of approach, a bird might remain in

such situations unmolested for comparatively long periods, whilst the rabbits on Burhou would doubtless afford a very succulent dietary.

Accipiter nisus. The Sparrow-Hawk.

An occasional, and not uncommon visitor during both winter and summer, except during the breeding-season, but it is more usually met with in winter. L. has one in his collection, and tells me he has shot six at various times. It is, I think, becoming less common.

Hierofalco islandus candicans. The Greenland Falcon.

Mr. Cecil Smith records that, during his visit to Alderney in 1878 he saw a stuffed specimen of this bird, which had been shot on the island somewhere about the autumn of 1876.

This is the only record I have.

Falco peregrinus. The Peregrine Falcon.

L. has shot two—a female on the 28th of October, 1889, and a male on the 12th of March, 1891.

Mr. Eagle Clarke saw one on the cliffs on the 20th of September, 1898. It is somewhat surprising that it has not been more often recorded, as there are several apparently suitable breeding-places for it at Alderney. I have not myself noticed it.

Falco subbuteo. The Hobby.

I saw one of these birds on the afternoon of the 19th of April, 1920. It stooped to one of the swallow tribe, which it missed, and in doing so came within twenty yards of me, affording an excellent view. I again saw it later on the same afternoon in my garden, but it was doubtless on migration, as it was not about the next day.

Falco æsalon. The Merlin.

L. tells me he has seen two, both during autumn, and that Mr. May of Alderney once shot one.

Mr. Eagle Clarke noticed one at the west end of the island on the 23rd of September, 1898.

Falco tinnunculus. The Kestrel.

A common resident ; in fact, more numerous here than I have ever seen it in any part of England, except possibly in one locality in the Isle of Wight last autumn, when it may, perhaps, have been migrating.

Mr. Eagle Clark found it extremely abundant during the last weeks in September 1898, and concluded therefrom that, in the case of Alderney, Mr. Cecil Smith was mistaken in his assumption that its numbers are not increased during the migratory season. My own opinion, however, based on several seasons' observation, is that Mr. Cecil Smith was correct and that this bird does not visit Alderney as a bird of passage, at least to any appreciable extent.

The number actually present on the island is constantly varying throughout the year by interchange of visits to and from the coast of France, and I think that very likely during Mr. Eagle Clarke's visit some of the French birds may have been here, but it may also be that he underestimated the number of residential birds. In walking round the island I should expect to encounter, in normal times, from twelve to twenty birds and very possibly more, whilst the occasions when one or two are not in sight are rare. If this number were collected together on one part of the island for any reason, such as the abundance of coleoptera, it might easily account for the number seen, and if in addition, and probably for the same reason, individuals had arrived from France, the number would be still more easily accounted for.

Phalacrocorax carbo. The Cormorant.

An uncommon winter visitor, and possibly a resident in very small numbers, but I have not myself found it breeding here, nor do I think that I have seen it here in the breeding-season, and I only include it as a resident on the authority of Mr. Cecil Smith, who states that one or two pairs breed at Burhou. Mr. Eagle Clarke found this species very abundant during his visit in September 1898. I have myself only very occasionally noticed it in the winter months, and have only once seen as many as three together. According

to my experience, one would not expect to find the cormorant here except as a casual visitor, as the locality with its strong tides, deep water, and rough rock-bound coast is not suited to it. A cormorant's natural habitats are shallow land-locked bays, and shallow muddy harbours and estuaries.

Phalacrocorax graculus. The Shag.

A common resident breeding here in some numbers, and as in most green water situations, taking the place of the cormorant.

I cannot understand how Mr. Eagle Clarke failed to observe it here in September 1898, as I cannot recall having ever failed to find several when I wished to, either feeding in the tide-way, or, as is often their habit, obtaining their food from the seaweed on the rocks exposed at low water.

Sula bassana. The Gannet.

This bird is not often seen near the shore, although it is a regular visitor outside the breeding-season, and usually in winter.

In December 1912 an immature bird was found on the golf links here with a broken wing and was killed by the man in charge of the links. It had doubtless tried conclusions with a telephone wire.

On the 8th of December, 1918, I was so fortunate as to have under close observation for some time from a point of vantage on shore, an adult male of this species. It was fishing at the entrance to Longy Bay, and I was on the top of an old fort overlooking and within 150 yards of it. The water was extremely clear and the surface smooth, and I could distinctly see the bird's movements under water. In one of its dives it turned through a considerable angle just beneath the surface, apparently by aid of its wings, and in order to follow its prey. On another occasion it entered the water almost horizontally at great speed, and moving rapidly just below the surface, either with its remaining velocity, or perhaps by use of its feet—it did not appear to use its wings—emerged from the water not less than 8 or 10 feet from the point of

entrance. I have not before had the opportunity of studying this bird at close quarters, and cannot say if this is its usual method, but have always thought that it fell vertically on to its prey.

The only time I have seen this bird here in any numbers was on the 19th of May, 1920, when a flock consisting of nine adults and two immature birds were observed fishing close to the shore. At this time, it was reported by the fishermen that large quantities of small pollack were off the coast, and a herd of at least fifty porpoises (*Delphinus phocaena*) of all ages was constantly patrolling round the island, so there were certain abnormal conditions to account for this, and the same conditions obtained still a week later, when large numbers of gannets were reported between Alderney and Guernsey.

Anser anser. The Grey-lag Goose.

L. tells me that this bird is an occasional winter visitor, coming to the island during hard weather, and usually in small trips of six or seven individuals. A number have been shot at various times. I have not myself observed it, but the winters I have passed on the island have been comparatively mild.

Anser brachyrhynchus. The Pink-footed Goose.

I killed one of these birds during a strong north-east gale on the 19th of December, 1913. It was by itself and rose from the rough grass bordering Longy Bay.

Branta bernicla. The Brent Goose.

Small trips of these birds are often seen off the rocks during the winter months. A winter visitor, but varying much in numbers according to the severity of the weather.

Anas boschas. The Wild Duck.

A winter visitor in small numbers and during severe weather only. They do not remain long, as they are almost immediately shot at. I have observed it occasionally in the autumn as a bird of passage.

Querquedula crecca. The Teal.

A winter visitor in small numbers during hard weather and never remaining long. L. tells me he usually sees a few in August and September, so it is also a bird of passage.

Mareca penelope. The Wigeon.

As in the case of the last two, this bird is a winter visitor in hard weather only, and in quite small numbers. It departs as soon as the weather modifies, if not in the meantime accounted for by the local sportsman. I cannot find that it ever occurs as a bird of passage.

Dafila acuta. The Pintail.

Mr. Cecil Smith says of this bird:—"Captain Hubbach writes me word that he shot one in Alderney in January 1863."

Edemia nigra. The Common Scoter.

Mr. Cecil Smith says:—"The Scoter is a common autumn and winter visitant to all the islands, generally making its appearance in considerable flocks." I am afraid its numbers must have sadly diminished since Mr. Smith's day, as I do not remember seeing it when stationed in Guernsey, nor on my fairly frequent winter passages between Alderney and Guernsey. I shot an immature female of this species in Longy Bay on the 9th of August, 1919. It was by itself and doubtless a straggler from some flock. I have no other record of it for the island, though it no doubt visits Burhou and some of the outlying rocks during winter.

Mergus merganser. The Goosander.

Mr. Cecil Smith says:—"The Goosander is a regular and tolerably numerous visitant to all the islands, arriving in the autumn and remaining throughout the winter." I have no other record of it, but birds which keep the sea, such as the divers and diving-ducks, are difficult to observe from land. Had I the facilities for going afloat during winter, I have little doubt but that this list could have been added to, in one or two particulars.

Mergus serrator. The Red-breasted Merganser.

This bird is occasionally seen in the autumn as a bird of passage, and a few visit the island in winter, usually during hard weather, or strong winds.

Mergellus albellus. The Smew.

I saw one of these birds, either a female or immature male, in Longy Bay in December 1918. It had been blowing hard from the north-east for some days.

Ardea cinerea. The Heron.

This bird pays the island an occasional visit both in the late summer and in winter. They presumably come from the French shore, and, so far as my observations go, usually make their appearance during spring-tides, when, doubtless, the fishing amongst the rocks at low water is better and more secure. I have never seen more than one at a time and they do not stay long.

L. says they are occasionally seen in winter, and on one occasion a pair remained throughout the summer. In 1917 he, on one occasion, saw three together on the rocks in Longy Bay.

Ardea purpurea. The Purple Heron.

Mr. Cecil Smith records one as being shot in Alderney about the middle of May, 1878, and quotes Mr. MacCulloch as the authority for another one shot here on the 8th of May, 1867.

Botaurus stellaris. The Bittern.

Mr. Cecil Smith says of this bird:—"The birdstuffer in Alderney (Mr. Grieve) and his friend told me they had shot Bitterns in that island, but did not remember the date."

Mr. Tourgis informs me that he once shot a Bittern here. It was during the winter of either 1892 or 1893. L. tells me that his father, Mr. J. A. Langlois, and a Mr. Sandford each shot a Bittern here sometime between 1880 and 1882.

Platalea leucorodia. The Spoonbill.

Mr. Godfrey, of Mannez Farm, Alderney, informs me

that he shot a Spoonbill on the rocks near Longy Bay, about fifteen years ago, and that he kept the beak for some time. Neither this nor the preceding bird can easily be mistaken for others, and I have little doubt that they were correctly identified.

Edicnemus edicnemus. The Stone-Curlew.

L. tells me that he shot one out of a little lot of four in December 1887. Mr. Tourgis also once shot one.

Phalaropus fulicarius. The Grey Phalarope.

Mr. Cecil Smith says:—"The Grey Phalarope is a tolerably regular and occasionally numerous autumnal visitant to all the islands." This does not apply now, and if it occurs at all it does so very seldom, although there seems to be no reason why it should not, as it is still, at times, fairly numerous on the opposite coast of Dorset.

Scolopax rusticola. The Woodcock.

It is to these birds that the islanders owe the greater part of their sport. They come over from the French coast in some numbers during the winter months, when the wind is in the east, or, better still, the south-east. They also come in calm weather and especially when there is a fog, and would doubtless remain were it not for the sporting proclivities of the inhabitants. They are met with principally on the cliffs, and a good spaniel is necessary to insure sport.

The Woodcock may often be seen coming over from the opposite coast at dusk, more especially if there is a moon, and I think that, in favourable weather, these birds, as well as the Snipe, make a regular flight across the Race, arriving here soon after dark, and the majority leaving for the French coast just before daylight. The following table giving the date of the first Cock of the season shot in Alderney since 1889, has been very kindly given to me by L., and since it possesses a certain human, as well as a scientific, interest, I give it here in its entirety and as received from him.

*Record of the date the first Woodcock has been shot in Alderney
since 1889.*

Year.	Month.	Shot by.	Locality.	Wind.	Remarks.
1889.	Oct. 18.	Mr. L. J. A. Langlois.	Martin's Bridge.	W.	
1890.	Oct. 19.	Mr. J. Herivel.	La Quoire.	S.E.	
1891.	Oct. 24.	Mr. A. C. Tourgis.	Bon Terre.	N.W.	
1892.	Oct. 14.	Sergt.-Maj. R. McLernon.	Clonque.	W.	
1893.	Oct. 20.	Mr. J. Brooks.	Telegraph.	S.W.	
1894.	Oct. 16.	Mr. N. Gaudion.	Bégignes.	W.	
1895.	Oct. 17.	Mr. H. Oliver.	Giffoine.	N.W.	
1896.	Oct. 17.	Mr. R. G. May.	Vallongy.	N.E.	
1897.	Oct. 19.	Mr. T. Brooks.	Val du Sud.	S.	
1898.	Oct. 21.	Mr. A. C. Tourgis.	Bon Terre.	N.W.	Missed by V. Petite on the 15th.
1899.	Oct. 23.	Capt. L. J. A. Langlois.	Vallongy.	N.E.	
1900.	Oct. 12.	Mr. R. G. May.	Essex.	S.E.	
1901.	Oct. 29.	Mr. A. C. Tourgis.	Bégignes.	W.	
1902.	Oct. 17.	Mr. N. Gaudion.	Trois Vaux.	W.S.W.	Flushed on the 11th by R. Herivel.
1903.	Oct. 23.	Mr. Jas. M. Gautier.	Longy drain.	S.E.	Seen flying over Braye on the 19th.
1904.	Oct. 3.	Mr. J. Brooks.	Bon Terre.	N.W.	
1905.	Oct. 11.	Capt. Theobald.	Essex.	E.S.E.	
1906.	Oct. 12.	Mr. J. Brooks.		W.	
1907.	Oct. 21.	Mr. R. G. May.	Essex.	E.S.E.	
1908.	Oct. 20.	Major L. J. A. Langlois.	Mouriaux.	N.N.W.	Mrs. L. Langlois flushed it on the 18th.
1909.	Oct. 26.	Mr. W. LeCocq.	Trois Vaux.	W.S.W.	
1910.	Oct. 17.	Mr. Jas. M. Gautier.	Longy drain.	S.E.	
1911.	Oct. 2.	Mr. A. C. Tourgis.	Trois Vaux.	W.S.W.	
1912.	Oct. 23.	Mr. J. P. Simon.	Essex.	E.S.E.	
1913.	Oct. 16.	Mr. E. Gantier.	Manez.	N.E.	V. Petite missed one on the 11th.
1914.	Oct. 15.	Major L. J. A. Langlois.	Essex.	E.S.E.	Mrs. L. Langlois flushed one in Pré gardens on 5th, and Major H. de L. Walters missed one in Essex on the 8th.
1915.	Oct. 20.	Mr. C. Cooley.		N.E.	
1916.	Oct. 20.	Mr. W. LeCocq.		S.W.	
1917.	Nov. 5.	Major L. J. A. Langlois.	Val du Sud.	S.	
1918.	Oct. 19.	Mr. V. Petite.		W.	
1919.	Oct. 9.	Mr. N. W. Gaudion.	Essex.	N.E.	

Gallinago gallinago. The Common Snipe.

A few are nearly always to be met with during the winter months, but it becomes more numerous during spells of hard weather. L. tells me that in 1899 Mr. W. LeClocq shot one of the dark variety of this bird formerly known as Sabine's Snipe, but it was unfortunately not preserved. I am of the opinion that, in favourable weather, this bird, as well as the Woodcock, pays regular visits to the island, crossing the Race at dusk and returning to the Cotentin at dawn. I have on several occasions seen it arriving in the evening from the direction of France.

Gallinago media. The Great Snipe.

L. tells me that he once saw one of these birds, and that Mr. R. G. May has, at various times, shot three. None of them seem to have been preserved, and this is the only record I can find of it.

Limnocryptes gallinula. The Jack Snipe.

A few usually to be met with during the winter months, becoming more numerous in severe weather.

Tringa maritima. The Purple Sandpiper.

I had one of these birds under close observation for over half an hour on the 13th of December, 1913. It was feeding among the seaweed on the rocks at the base of the breakwater. I have no other record of this bird, which is not uncommon, in suitable localities, on the opposite coast of Dorset.

Tringa alpina. The Dunlin.

The Dunlin occurs most numerous as a bird of passage, although a few invariably winter here, and in hard weather it even becomes plentiful. A flock of six of these birds in summer plumage frequented Longy Bay during the first week of May, 1919.

Calidris arenaria. The Sanderling.

Mr. Cecil Smith says :—"The Sanderling is a regular and rather early visitant to all the islands." I have not

noticed it myself, and it has undoubtedly become more scarce since Mr. Smith's time.

Langlois has one of these birds in his collection, shot by himself in Alderney some years ago. I had previously overlooked it, mistaking it for a Dunlin.

Totanus totanus. The Redshank.

This bird is fairly common in the late summer and autumn as a bird of passage, but is less frequent in the spring. The first birds usually make their appearance towards the end of July and depart again early in September, although one or two generally winter here.

Totanus nebularius. The Greenshank.

I saw a single individual of this species feeding in Longy Bay on the 22nd of July, 1919. This is the only record I have for Alderney.

Totanus hypoleucus. The Common Sandpiper.

This Sandpiper is not uncommon during the spring and autumn migrations, and some few, doubtless non-breeding birds, usually pass the summer here; but the majority arrive about the middle of July, and remain until September. These birds have been particularly numerous this year (1920), and a large number have remained throughout the summer.

Limosa lapponica. The Bar-tailed Godwit.

These birds are occasionally met with as birds of passage in spring and autumn. Two were obtained at the Casquets Light in the spring of 1918, and I saw one feeding in Longy Bay on the 21st of August, 1919.

Numenius arquata. The Curlew.

Common during the winter months, a flock of some thirty birds or so being usually seen in the vicinity of Longy Bay. They usually make their first appearance in July. Mr. Cecil Smith says that they remain throughout the summer, but I do not think this is the case nowadays, except in isolated

cases. A pair have, however, remained here throughout this present summer (1920).

Numenius phaeopus. The Whimbrel.

Common as a bird of passage in the spring, and usually remaining throughout the greater part of May. It is far less common in the autumn. I saw one in Longy Bay on the 21st of August, 1919.

Charadrius apricarius. The Golden Plover.

Occurs as a bird of passage in both spring and autumn, and often appears in large flocks during hard weather in winter, but in mild winters few or none are seen. Last year, however, was an exception, and a flock of fifteen or sixteen birds arrived about the middle of October (1919) and remained for about a fortnight, although the weather was quite mild.

Squatarola squatarola. The Grey Plover.

An occasional winter visitor in small numbers, but never numerous nor seen in large flocks. I shot one in Longy Bay on the 10th of December, 1919, and another in summer plumage on the 19th of April, 1920.

Ægialitis hiaticula. The Ringed Plover.

Common in late summer and winter. I have not noticed it here in the breeding-season and do not think it nests here, certainly not in any numbers.

Ægialitis alexandrina. The Kentish Plover.

A fairly common summer visitor. I shot one out of three in Longy Bay on the 27th of March, 1919—a very early date. A few pairs breed in the neighbourhood, but their numbers are decreasing. Three eggs appear to be the maximum number they lay, and they often do not lay more than two. The eggs of this bird are not easy to find, as before incubation takes place there is usually no sign of a nest, and the eggs are, in most cases, more than three-fourths covered with sand, whilst after the bird has commenced to sit, the eggs will generally be found fully exposed and

resting in a neatly rounded hollow. I was at first much puzzled over this circumstance and imagined it was a method adopted by the bird to conceal its eggs; but latterly, and with more experience of other small objects resting on this sand—some of which are still beneath it,—I have inclined to the opinion that it was due to the wind blowing the sand over the nest and thus filling up the hollow and almost covering the eggs. This would naturally not take place when the bird was sitting.

Eudromias morinellus. The Dotterel.

L. has shot three — one in 1898, one in 1900, and one in 1902—all in the early spring. He has one in his collection. I saw two of these birds in the flesh, which had been shot by a man in Longy Bay on the 1st of September, 1919.

Vanellus vanellus. The Lapwing.

There are usually a few about during the autumn and winter months, but these are often augmented by the arrival of large flocks during hard weather. I saw a flock of ten as late as the 1st of April, 1914. I have no evidence that they breed here, and have not seen them here in the summer.

Hæmatopus ostralegus. The Oystercatcher.

The Oystercatcher is a very common resident, breeding numerous in the vicinity. I do not think its numbers are appreciably, if at all, affected by migration. During the years 1913 and 1914, I had frequently noticed a white variety of this bird. It was usually to be seen feeding among the others in the neighbourhood of Longy Bay. It appeared to be almost pure white, and, at a distance, had much the appearance of a Kittiwake, showing up plainly against the dark background of seaweed and rock. On my return to Alderney in the autumn of 1918, I again saw a white Oystercatcher in the same neighbourhood. Was it, I wonder, the same bird?

The Oystercatcher usually lays three eggs, but I have on

two occasions found nests containing four. The nests of this bird are very varied in construction, and well worth studying. Perhaps more often than not, no nest is constructed at all, but the eggs deposited amongst the stones of the beach. Again, the eggs are often laid in a hollow formed against the seaweed thrown up at high spring-tides. I once found two eggs jambed in a crevice between two large stones, their small ends vertically downwards—an extraordinary and one would imagine uncomfortable position, especially for the young birds, if they ever hatched out. Nests are often carefully lined with small limpet shells, some half an inch in diameter, with their small ends uppermost, and as these have usually been washed smooth and white by the action of the waves, the nests thus formed are very conspicuous. I once found one in an old fort. It was placed in a hollow against the racer of an old gun emplacement, and lined with granite-gravel taken from the old pathway in the fort. This gravel, which normally is rough and angular, was most carefully laid and fitted together, a flat surface of each pebble upwards, giving the appearance of an old Roman mosaic work.

Arenaria interpres. The Turnstone.

A common winter visitor, arriving in late August or September. A few remain throughout the year, but, I think, only non-breeding birds. Mr. Cecil Smith considered that they bred on the islands, but the evidence of this seemed to be uncertain even in his time, and I do not know that the nest and eggs have actually been found.

Larus canus. The Common Gull.

Mr. Cecil Smith says:—"The Common Gull, though by no means uncommon in the Channel Islands during the winter, never remains to breed."

Larus argentatus. The Herring-Gull.

A common resident, but more plentiful during the breeding-season than at other times of the year.

Larus marinus. The Greater Black-backed Gull.

A resident, breeding here.

Larus fuscus affinis. The British Lesser Black-backed Gull.

A common resident, breeding here, though less numerous than the Herring-Gull. The Herring-Gull and the Lesser Black-backed Gull breed here in the same localities and in some cases in the same colony, but if one carefully observes these birds whilst on their nests, it will be noticed that in most cases the Herring-Gull chooses the bare rock or face of a cliff, whilst the Black-backed Gull, although nesting close at hand, seems to prefer to place its nest amongst grass and undergrowth, or on the soil. The Greater Black-backed Gull is a solitary individual; it does not nest in colonies, and when possible seems to prefer a small isolated rock to itself.

Larus ridibundus. The Black-headed Gull.

A few may generally be met with in winter.

Larus minutus. The Little Gull.

This Gull is not uncommon during the winter months, but it prefers to keep some distance from shore and so is not often seen. It appears to be more numerous during heavy gales.

Rissa tridactyla. The Kittiwake.

Some usually to be seen during winter, and I have noticed one or two throughout the summer, but these are probably non-breeding birds.

Sterna hirundo. The Common Tern.

Before the war this bird occurred as a bird of passage in small numbers, but I did not see it either last year (1919) or this spring, which is curious, seeing that a colony breed near Guernsey.

Sterna paradisea. The Arctic Tern.

These birds were common in Longy Bay and off the coast during the first week in September 1920.

Sterna minuta. The Little Tern.

On the 5th of September, 1919, I saw a few of these birds fishing in Longy Bay. This is the only record I have for it.

Sterna sandvicensis. The Sandwich Tern.

Some hundreds, quite possibly over a thousand, of these birds appeared off the coast on the 12th of September, 1920, after all the Arctic Terns, mentioned above, had left. It was difficult to estimate the number, as Alderney Race, as far as the eye could see, appeared to be full of them. They were fishing busily, some quite close to the shore. On the 13th, however, they had evidently passed on, and there were none to be seen. I had previously seen two of these birds in Longy Bay on the 9th inst., one of which I obtained.

Alca torda. The Razorbill.

A resident, but more numerous in the breeding-season than at other times.

Uria troille. The Common Guillemot.

A resident, less common than the last species, but, as in the case of that bird, more numerous during the nesting-season than at other times.

Fratercula arctica. The Puffin.

A very common summer visitor, breeding here in large numbers. In August 1913 a disease seems to have attacked the colony of Puffins breeding on Burhou, and the whole island was thickly covered with the dead bodies of these birds.

Thalassidroma pelagica. The Stormy Petrel.

Whether the Stormy Petrel should be considered a resident or a summer visitor I am not certain. It still breeds in the neighbourhood in some numbers, but I have not noticed it at other times of the year. This is however, perhaps, not unnatural, considering its habits.

Puffinus puffinus. The Manx Shearwater.

I have only come across this bird on one occasion. During the last week in May and the first day or two in June of this year (1920) it was comparatively plentiful off the shore. I do not know that it breeds here, but if not, its appearance at this time of year is certainly curious. I may add, however, as a possible explanation of the circumstance; that the period referred to was noticeable for the large shoals of young pollack, the herds of porpoises, and the flocks of gannets in the vicinity.

Mr. Eagle Clarke found it very numerous off the Casquets on the 30th of September, 1898, and Mr. Cecil Smith considers it an occasional wanderer to the Channel Islands.

Puffinus gravis. The Great Shearwater.

Mr. Eagle Clarke saw a single example of this bird, among the Manx Shearwaters, off the Casquets on the 30th of September, 1898, and Mr. Cecil Smith includes it as an occasional wanderer to the Islands, on the strength of having seen a small flock of four or five of them in the Channel in July 1866, whilst still within sight of the Casquets. I have myself occasionally noticed this bird whilst crossing between Guernsey and Weymouth.

Colymbus arcticus. The Black-throated Diver.

I saw one of these birds in the Roads on the 15th of April, 1914. It was fishing close under the breakwater.

Colymbus immer. The Great Northern Diver.

Mr. Cecil Smith says:—"The Great Northern Diver is a common autumn and winter visitant to all the Islands." I have not myself seen it, and think that they have become less numerous since Mr. Smith's time—at any rate in this locality.

Colymbus stellatus. The Red-throated Diver.

Occasionally visits the Roads and Longy Bay in winter, usually during rough weather or after a storm.

Podiceps auritus. The Slavonian Grebe.

A regular winter visitor in small numbers. This, as well as the next species, is usually met with either off the Platte Saline beach or in Longy Bay.

Podiceps cristatus. The Great Crested Grebe.

A regular winter visitor in small numbers, but perhaps slightly less numerous than the last species.

Rallus aquaticus. The Water-Rail.

A by no means uncommon winter visitor. I cannot find that it breeds here, nor have I met with it during the breeding-season. L. tells me that, when out shooting, he has frequently seen this bird sitting on a fence, or the branch of a tree, watching the dog working in the ditch below. This is, of course, a rather usual habit of the Moorhen, but I have not before heard of the Water-Rail behaving thus.

Porzana porzana. The Spotted Crake.

L. shot one here on the 10th of November, 1891, and has it in his collection.

Porzana pusilla intermedia. Baillon's Crake.

L. shot one in the autumn of 1891, the same year in which he shot the Spotted Crake, but he has not the exact date. The bird is in his collection.

Crex crex. The Land-Rail.

A common summer visitor and also a bird of passage, but as such is more frequently met with in autumn than in spring. L. says of this bird :—"From the end of August to October large flights arrive with north-west and north-east winds. Mr. R. G. May shot fifty on one day in September 1886. My largest bag in one day was twenty-seven, but of late years they do not come in such large numbers. When a flight arrives it never remains over the second night." The record of these large flights in September is very interesting. Mr. Cecil Smith makes no mention of these

flights in his book ; so it would seem as if Guernsey were rather out of their line of migration.

There would seem to be reasons, indicated above, which might account for these birds not remaining over the second night.

Gallinula chloropus. The Moorhen.

Occasionally met with in winter, and it would appear from the following account that it probably sometimes breeds here, which I should not think unlikely. I saw one shot at the bottom of my garden in the autumn of 1919. L. says :—" I have shot seven at various times and killed the eighth on the 21st of January, 1914. During the summer of 1916 there were eight in the Longy pond—cocks and hens. I watched them daily for hours playing about on the edge of the pond, and think they must have bred there."

Fulica atra. The Coot.

L. tells me that he has seen at least two, which were shot here at different times many years ago. This is the only record I have for it.

Columba palumbus. The Wood-Pigeon.

The Wood-Pigeon is common as a bird of passage, especially during spring, when it often arrives in large flocks towards the latter end of April or beginning of May, and only remains a short time. Its late arrival is somewhat curious, as in England it is an early breeder. It is also met with in small numbers in the late summer, when the harvest is being gathered and at odd times during the winter months. I have not found it breeding here.

Columba livia. The Rock-Dove.

One or two of these birds frequent the island throughout the year, and despite its small numbers it can, I think, be looked upon as a resident. I found a pair nesting here during the last season (1920), and expect that a pair or two do so regularly.

Coturnix coturnix. The Quail.

From the fact that these birds occasionally winter in the south of England, it might be thought that some would pass the winter in Alderney; but this does not appear to be the case, and Langlois can only recall one instance of the Quail being seen there during the winter months, and this was one he shot in November many years ago. All the breeding-birds leave the island early, and mostly before the opening of the shooting-season.

XXIV.—*Notes on Birds in South Russia.*

By Lieut. J. N. KENNEDY, M.C., R.A., F.R.G.S., M.B.O.U.

DURING my recent service with the British Military Mission in southern Russia, I made occasional notes on birds, and I have now put them together in this paper, more in the hope that they may prove of use to future observers in these regions, than in the belief that they contain any original observations of value.

After an extended tour through central and south Russia during the autumn and early winter of 1919, I found myself at Novorossisk, a little seaport near the northern extremity of the Caucasus range. Our activities had been much limited by the retreat and disorganisation of Denikin's Army, and at Novorossisk we were awaiting for some two months the inevitable order to embark with the remains of the forces. It was during this period that I found leisure to make a small collection of bird-skins, and to compile the notes which form the first section of this article.

In the Crimea, after a short period of re-organisation of the White Army, now commanded by General Wrangel, we were involved once more, during the spring and summer of 1920, in active operations, and I was unable to make any systematic ornithological observations. I have therefore contented myself, in the second section, with a few general remarks on the Crimea, in which I include some suggestions given to me by Lieutenant V. Martino, of the Russian Army,

as to local subspecies which have not yet been described in Russia. Perchance some fellow member of the B.O.U., visiting the Crimea, may find these latter a useful indication for future research.

I would here express my indebtedness to my brother, Lieut. J. R. Kennedy, M.C., R.A., who collaborated with me at Novorossisk, and to Lieut. V. Martino, of Sebastopol, who helped me in the Crimea.

Dr. E. Hartert has been so very kind as to verify my identification of the skins, and to assign them to their proper subspecies as far as possible.

The skins I have presented to the Natural History Museum, with the exception of that of the Blue Tit shot at Novorossisk, which is now in the Tring Collection.

The eggs mentioned in the second section are now in the collection of Mr. J. G. Gordon, Corsemalzie, Whauphill.

I. NOVOROSSISK.

Novorossisk is a small town lying round an open bay near the northern end of the Caucasus Mountains and not far south of the Straits of Kertch. The hills rise steeply from the shore, their slopes being rocky and clothed generally with low trees and bushes. Behind the hills lies Circassia and the steppe-land, the Scythia of two thousand years ago, where the fabled one-eyed Arimaspians waged everlasting warfare with griffins which guarded treasures of gold.

The winter climate of Novorossisk is more severe than a study of the map might lead one to suppose—the thermometer often falls to 20° F. below freezing-point, and the sea freezes along the shore, although not to such a great extent as in the Sea of Azov, where we had some skating and ice-boating. The chief feature of the weather is the north-east wind, which blows with incredible velocity for a few days at a time at irregular intervals. This wind makes the port a dangerous one, and while it blows, ships lying close inshore, even inside the breakwater, are unable to communicate with the land by boat. On occasion, during the nor'easter, some of our officers had to crawl on hands and knees from

their quarters to the mess, being unable to stand upright. (I may remark that this did not happen after dinner!) One of our motor cyclists was once blown into the sea with his machine while proceeding along the shore-road.

My brother and I used to venture up the hillsides in search of birds when the nor'easter was blowing, in the hope of falling in with some of the rarer species which might be driven down from the mountains, but the birds were generally all congregated in the lower valleys and about the houses at such times, and we seldom saw anything except an occasional Woodcock or a few Goldfinches, which seemed to stand the cold better than most other birds. Whilst scrambling about the slopes on those expeditions, clad in great coats and fur caps, and grasping the trees and bushes with one hand whilst the other held a gun, we would hear every few minutes a roar, like that of an express train, heralding the approach of an especially violent gust as it came tearing down from the hill-tops, driving clouds of snow before it. We would then cling with both hands to a tree-trunk until it swept down past us, the snow first blotting out the town below and then billowing away across the waters of the bay, which would be lashed into flying spray.

The periods of these winds were usually followed by mild summer-like spells, during which the great flocks of Duck, which had been brought down to the bay by the cold, would gradually dwindle and disappear to inland waters. Towards the end of March the duck became so weak and tame during the storms that they would take shelter in the streets of the town and allow themselves to be captured by hand or knocked over with stones. Bramblings and other small birds also suffered greatly from the cold.

Most of my observations were made on the eastern side of the bay and in the bay itself, where we used to shoot Duck frequently. This sport was rendered somewhat exciting by the fact that the Russian soldiers shot at the Duck with rifles from the shore to such an extent that one might almost have imagined at times that a sharp engagement was in progress. When duck-shooting we used to keep our hands in our gloves

until the moment came to seize the gun, and thrust them back whenever the shot had been taken. Even so, our fingers would be excruciatingly painful for a few seconds after contact with the metal. We sometimes returned from these expeditions sheeted in ice formed of frozen spray.

The following notes were all made during February and March, 1920.

Garrulus glandarius (subsp. ?). Jay.

One example was seen in a glen near the town on 26.ii.20, and its harsh cry was subsequently heard among the trees on several occasions.

Sturnus vulgaris sophiæ. Starling.

♀. Novorossisk, 3.ii.20.

Four of these birds were seen during a cold spell on 3.ii.20. They were very shy, but one was secured. This is my only record.

Dr. Hartert says of this skin: "It is *Sturnus v. sophiæ* if that is a 'good' subspecies; it seems generally quite recognisable, but is sometimes difficult to distinguish."

In the field this Starling struck me as being much lighter in general colouring than *Sturnus v. vulgaris*.

Coccothraustes coccothraustes coccothraustes. Hawfinch.

♂. Novorossisk, 2.ii.20.

♀. Novorossisk, 2.ii.20.

A few Hawfinches were always to be seen about the valleys near the town.

Chloris chloris chloris. Greenfinch.

♂. Novorossisk, 3.ii.20.

♀. Novorossisk, 3.ii.20.

Fairly common, consorting often with Bramblings.

Carduelis carduelis (subsp. ?). Goldfinch.

♀. Novorossisk, 6.ii.20.

Flocks were frequently seen, one consisting of over forty birds. They seemed to occur at higher altitudes than most other species during the cold winds, and I have remarked

more than once that they were the only small birds to be seen on the upper slopes during a nor'easter.

Dr. Hartert is doubtful of the subspecies of my specimen, although it is a good skin, and considers a series necessary to determine this.

Fringilla cœlebs cœlebs. Chaffinch.

♂. Novorossisk, 10. ii. 20.

Fairly common, several always being noted during a walk along the hillsides.

Fringilla montifringilla. Brambling.

♂. Novorossisk, 2. ii. 20.

♀. Novorossisk, 7. ii. 20.

Perhaps the commonest species, large flocks constantly frequenting the vicinity of the town. During the nor'easter they would become so tame that they could be caught by hand, and large numbers died of cold. They had all disappeared by 12 March.

Passer domesticus domesticus. House-Sparrow.

Common in the town.

Emberiza cia cia. Meadow-Bunting.

♂. Novorossisk, 8. ii. 20.

Rather uncommon, but regularly seen.

Melanocorypha calandra. Calandra Lark.

♀. Novorossisk, 12. iii. 20.

This species was not observed before 12 March. On this day, while seated at my window, I saw a flock of some forty of these birds come northwards up the bay, evidently on migration. Taking my collecting-gun, I went in search of them on the hillside, where I presently found them sheltering behind bushes, and succeeded in obtaining one specimen.

I see that Mr. P. J. C. McGregor, writing in 'The Ibis' (1917, p. 10) notes 10 March as the first date in 1910 of the occurrence of this species at Erzerum, which is 300 miles south of Novorossisk.

Galerida cristata (subsp.?). Crested Lark.

♂. Novorossisk, 6. ii. 20.

A few of these birds frequented the hillside and the neighbourhood of the shore.

Alauda arvensis cinerascens. Sky-Lark.

♂. Novorossisk, 5. ii. 20.

o Novorossisk, 1. ii. 20.

Very common.

Anthus pratensis. Meadow-Pipit.

o Novorossisk, 3. ii. 20.

A few were always to be seen about the hillsides and along the shore.

Monticola saxatilis. Rock-Thrush.

I saw this species once only, a male having been observed on 27. i. 20 during a spell of cold weather. Owing partly to its shorter tail, the Rock-Thrush strikes one as being much plumper than our Song-Thrush.

Motacilla alba alba. White Wagtail.

♂. Novorossisk, 6. ii. 20.

Occasionally seen near the shore in February.

Motacilla flava (subsp.?). Yellow Wagtail.

One example of a form of Yellow Wagtail was seen near the shore in February.

Certhia familiaris familiaris. Tree-Creeper.

o Novorossisk, 1. ii. 20.

One example only was met with.

Parus major major. Great Tit.

o Novorossisk, 3. ii. 20.

Common.

Parus cæruleus orientalis. Blue Tit.

o Novorossisk, 6. ii. 20.

Rather scarce.

Turdus pilaris. Fieldfare.

♀. Novorossisk, 7. ii. 20.

Uncommon. Three small companies were seen high on the hillsides during a fine spell of weather in early February.

Turdus viscivorus viscivorus. Mistle-Thrush.

Four or five pairs were observed in a valley near the town towards the end of February.

Turdus merula (subsp.?). Blackbird.

A few were always to be seen.

Phoenicurus ochrurus gibraltariensis. Black Redstart.

♂. Novorossisk, 5. ii. 20.

I have six records of this handsome species. It frequented the rocky slopes in the vicinity of houses.

Erithacus rubecula rubecula. Robin.

o Novorossisk, 2. ii. 20.

Rather uncommon, only one or two having been observed.

Prunella modularis (subsp.?). Hedge-Sparrow.

o Novorossisk, 8. ii. 20.

I have two records only of this species, both on the 8th of February.

Troglodytes troglodytes troglodytes. Wren.

♂. Novorossisk, 3. ii. 20.

Not at all common.

Dryobates minor (subsp.?). Lesser Spotted Woodpecker.

One example of a form of Lesser Spotted Woodpecker was twice seen among the trees on the hillside on 6. ii. 20 and 8. ii. 20. I should have liked to shoot this bird for determination of subspecies, but on the only occasion when I found myself within range of it there was a jammed cartridge case in my gun.

Falco peregrinus (subsp.?). Peregrine Falcon.

One frequented the hills near the town and was often seen.

Falco tinnunculus tinnunculus. Kestrel.

Only one record in February.

Anas platyrhyncha platyrhyncha. Wild Duck.

A few were seen, and one was shot in the bay in February.

Anas penelope. Wigeon.

Only once seen in February.

Nyroca ferina ferina. Pochard.

♂. Novorossisk, 6.ii.20.

Fairly common in small companies in the bay, where we shot a number.

Nyroca fuligula. Tufted Duck.

♂. Novorossisk, 6.ii.20.

This was by far the commonest Duck, flocks of several hundreds of birds frequenting the bay. They always increased noticeably in numbers after the cold nor'easter had been blowing. This Duck is also very numerous in winter along the south coast of the Crimea.

Nyroca marila marila. Scaup.

The Scaup was numerous in the bay, where it occurred in large flocks. This Duck was frequently shot.

Netta rufina. Red-crested Pochard.

♂. Novorossisk, 12.ii.20.

Several of these Ducks appeared in the bay among the flocks of Tufted Duck and Pochard on 12.ii.20, after a spell of very cold weather.

Mergus serrator. Red-breasted Merganser.

Occasionally seen in the bay.

Phalacrocorax carbo (subsp.?) Cormorant.

Several were seen in the harbour from time to time.

Phalacrocorax graculus (subsp.?) Shag.

A few were observed.

Podiceps cristatus cristatus. Great Crested Grebe.

o Novorossisk, 4.ii.20.

These birds frequented the harbour and the bay in

companies of from four to ten birds and, more commonly, in pairs.

Podiceps ruficollis ruficollis. Little Grebe.

One or two Little Grebes were seen feeding close in shore during February.

Scolopax rusticola. Woodcock.

The Woodcock was not uncommon on the snow-covered hillsides, especially during the nor'easter, when they had probably crossed to the lee side of the mountains for shelter.

Larus ridibundus. Black-headed Gull.

Numerous about the shores of the bay.

Larus argentatus cachinnans. Herring-Gull.

Common. Eighty were counted wheeling over the harbour on 5 February.

Tetraogallus caucasicus. Caucasian Snow-Partridge.

My brother saw a bird on 4.ii.20 which was probably of this species. The white marking of the wings was distinctly seen. This record would seem to indicate that the Snow-Partridge occurs at rather low altitudes (300 ft.) during extremely cold and stormy weather.

II. THE CRIMEA.

The Crimea offers a wide field of enterprise to the field naturalist, comprising as it does such a varied terrain, and having such an interesting geological history. Along the southern coast-line extends a range of mountains, for the most part wild and rocky and well-wooded, although of late years the Tartars have felled trees to such an extent that the climate is said to have been affected. On the seaward slopes there is a profusion of blossoming trees, and, during a short walking tour in April, I observed many of our garden flowers, such as peonies and narcissi, growing wild. North of these mountains lie the steppes, stretching away like the

sea for miles on every hand, and carpeted in spring with tulips and poppies of every hue. In the north, along the shores of the Putrid Sea (deriving its name from an unpleasant odour, chiefly noticeable during a breeze and due to its stagnant and enclosed nature), lie great marshes—the haunt of Duck and Waders. Here there are banks and islands which are the nesting haunts of innumerable sea-birds.

My bird-notes from the Crimea are of the scantiest, but perhaps a few remarks may be of interest. I was there from April to June, 1920.

I am not a geologist, but I will set down the following theory of geological history which was described to me by Russians there, as it will, if correct, be of interest to ornithologists. The hypothesis is that in the remote past the Crimean Mountains were a prolongation of the Caucasus range, and that they were subsequently cut off by the sea, and formed an island for some time. It was presumably during this period that island forms of life developed characteristics which have persisted to the present day, even after the uplift of the Crimean steppes which have formed a junction with the mainland to the north. It would therefore appear that the hill district in the south is the true home of subspecies peculiar to the Crimea.

Lieut. Martino indicated the following subspecific forms as not yet having been described owing to lack of complete series of specimens, and I feel sure he would have no objection to my making his suggestions more widely known :—

Astur palumbarius (subsp.?).

Regulus cristatus (subsp.?).

Accentor modularis (subsp.?).

Ardea cinerea (subsp.?).

Loxia curvirostris (subsp.?).

Ruticilla mesoleuca (subsp.?).

Motacilla boarula (subsp.?).

Turdus merula (subsp.?).

I retain his own nomenclature.

He informed me that the following subspecies have already been described and recognised by the Russians :—

Coccothraustes coccothraustes nigricans.

Fringilla cælebs solomki.

Fringilla carduelis nikolski.

Chloris chloris mensfieri.

Picus major pinetorum.

Cyanistes cæruleus brauneri.

Acredula rosea taurica.

Sturnus vulgaris tauricus.

Certhia certhia buturlini.

Troglodytes parvulus hyrcanus.

Of the foregoing I obtained skins of the Chaffinch (♂ Mackenzie Heights, 20. vi. 20, and ♀ Mackenzie Heights, 20. vi. 20), Greenfinch (♂ Mackenzie Heights, 21. vi. 20), and Blue Tit (? Mackenzie Heights, 20. vi. 20). The first two Dr. Hartert assigns, without comment, to *Fringilla c. cælebs* and *Chloris c. chloris* respectively, whilst he finds the last skin to be too bad for identification of the subspecies.

Specimens of the Tree-Pipit (*Anthus t. trivialis*) and of the Red-backed Shrike (*Lanius c. collurio*)* were also obtained in June from the Mackenzie Heights and Inkerman.

The Bee-eater (*Merops apiaster*) is not uncommon, and was frequently seen perching on telegraph-wires. These birds do not appear to form colonies here as they are said to do in Spain. The Rook (*Corvus f. frugilegus*) is very common everywhere, and small rookeries are seen all over the Crimea.

On the steppes there are vast numbers of Larks. The Great Bustard (*Otis tarda*) was often met with, and companies of three or four birds were more than once seen circling in ponderous flight over the plain. The Hoopoe (*Upupa e. epops*) is a very common species in the Crimea, a few pairs frequenting the vicinity of every village. One

* Dr. Hartert says of my specimen of the Red-backed Shrike: "There is a supposed Caucasian race, but its characters and distribution are doubtful; it is supposed to have less rufous on the back and smaller bill, but both characters are quite doubtful and variable. This specimen agrees with some others not from the Caucasus."

nest containing nine eggs in various stages of incubation was found on 15 May in the roof of a peasant's hut, nearly all the tiles having been removed in the process of search, much to the disgust of the owner, who was only pacified by an assurance that his name would be entered on the data label.

In the marshes and on the sandbanks of the north great numbers of Terns and Gulls breed; eggs of the Slender-billed Gull (*Larus gelastes*) were obtained at Arabat. The Great Black-headed Gull (*Larus ichthyaëtus*) was frequently seen flying over the Putrid Sea. Other birds noted in the marshes were the Avocet, Lapwing, Garganey, and a species of Harrier which was nesting near Djankoi.

I was given some Eagle's eggs taken on 20.iv.20 by Lieut. Martino, who had assigned them to "the form of Imperial Eagle without a white marking on the shoulder." It appears possible that they are eggs of the Steppe Eagle. The nest was in a tree some 30 feet from the ground in a valley of the Mackenzie Heights, and the birds had built in the same locality for several years. The chief food of the Eagle was described as consisting of "sushliks," the common rodents of the steppes.

Eggs were also obtained of the following:—Greenfinch, Chaffinch, Red-backed Shrike, Calandra Lark, White-winged Lark, Jay, Hooded Crow, Starling, Blackbird, Song-Thrush, Magpie, Mistle-Thrush, Blue Tit, Longtailed Tit.

In conclusion, I may perhaps be permitted to set down a note from my diary which throws a gleam of light on ancient days. Falconry appears to be a lost art in the Crimea, but it was once a favourite pastime of the Tartar Khan, whose palace is still to be seen in good repair at Bahkchi-Serai. The following story was related to me by the Circassian Sergeant—a fine tall fellow, distinguished by his long and fierce moustache and bright scarlet breeches—who was chief of the body-guard of a Russian General to whose staff I was attached for some time. One of his ancestors was the Khan's Chief Falconer. In the royal mews was a pair of rare and valued Falcons of exceeding courage and swiftness of flight, which the Khan had procured at great trouble and expense from an eastern land. It came to pass that, one morning,

the Chief Falconer, on his rounds, discovered in the cage of these Falcons an egg remarkable for the beauty of its colouring. This egg he furtively concealed in the folds of his dress and carried off to his quarters. Subsequently he presented it, for hatching, to a neighbouring prince, who vied with the Khan in his love of Falcons, and in exchange, he received a damsel of surpassing loveliness whom he had long desired to add to the number of his wives. Unfortunately for him, the Khan discovered the misdemeanour of his Falconer, who fell into disfavour and had to flee for his life across the sea to Circassia, where, perchance, some wandering ornithologist may again hear this story from the lips of one of his numerous descendants.

XXV.—*On the correct name of D'Aubenton's "Manucode à Bouquets."* By Lord ROTHSCHILD.

WHEN looking up Birds-of-Paradise in connection with the "Plumage Bill," Mr. T. Iredale drew my attention to the statement by Mr. Ogilvie-Grant on page 24 of the Jubilee Supplement of this journal, with regard to the synonymy of a species of *Diphyllodes*, that Dr. Hartert and I had agreed that his synonymy of this bird was correct. I wish here to put this synonymy right, and at the same time say I had not agreed to Mr. Grant's view.

Mr. Grant adopts Boddaert's name, changing his *speccosa* into *speciosa*, as being the author's intention. This he does because the name *speccosa* dates from 1781, whereas he asserted Pennant's name of *magnifica* in Forster's Indian Zoology dated only from 1795.

This is erroneous, as Pennant's name dates from the first German edition, viz. "Indische Zoologie, &c." herausgegeben von Johann Reinhold Forster, Halle 1781, not from the 2nd and 3rd English editions of 1790 and 1795. Therefore the correct name of D'Aubenton's bird (Pl. Enl. pl. 631) is *Diphyllodes magnifica* (Penn.) and not *D. speccosa* (Bodd.). Moreover, according to the International Rules *speciosa* is inadmissible, as only author's corrections in the current volume are valid.

XXVI.—*Results of a Study of Bird-Migration by the Marking Method.* By A. LANDSBOROUGH THOMSON, O.B.E., M.A., D.Sc.

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I.—INTRODUCTION.

THE ABERDEEN UNIVERSITY BIRD-MIGRATION
INQUIRY.

THIS paper embodies the main results of the Aberdeen University Bird-Migration Inquiry, which was set on foot in 1909 for the purpose of exploiting the method of study

afforded by the device of "bird-marking" and came to a gradual end during the war. Two interim reports have already been published: the first (19)* gave full details of all results obtained up to the summer of 1912, without any attempt to draw conclusions therefrom, and it may be of value as giving a fair sample of the kind of data obtainable by this method, although publication of the remaining results in such bulky form has been considered unnecessary. The second report (20) gave only brief notes on such further records, up to the spring of 1915, as were of particular interest. The writer has also read papers before the Royal Physical Society of Edinburgh (18) and the Zoology Section of the British Association for the Advancement of Science (1912 Meeting), setting forth the general scope and purposes of the method: in these and some minor papers a few early records were quoted, but they were also included in the first report. The purpose now in view is to summarise all the data in systematic form, and to give such conclusions as seem warranted either as to the value of the method or as to the facts and problems of bird-migration itself.

The writer carried on the inquiry as a piece of research from the Natural History Department of the University of Aberdeen, under the general direction of Prof. J. Arthur Thomson, LL.D. From 1910 to 1914, inclusively, most of the working expenses were covered by a grant from the Carnegie Trustees. A debt of gratitude is due also to those who co-operated in the actual marking of birds, as well as to the many correspondents who kindly supplied information as to "reappearances." The help in the central routine work of the inquiry rendered at different times by the late Mr. Lewis N. G. Ramsay, M.A., B.Sc., by Mr. James Ewing, M.A., D.Sc., and by Miss Maribel Thomson, M.A., B.Sc., calls for special mention; the last-named took the writer's place, as regards this work, throughout the war.

It should be stated that the work of marking was at its

* The numbers in parenthesis refer to the references given in Section XIII. (p. 526). References not relating to the marking method are quoted in the text.

height in 1914, and that it would have continued at a high level for a few years if circumstances had remained normal. As it was, the work not only entered on a premature decline, but a great deal of it was probably rendered less fruitful by unfavourable conditions for the reporting of reappearances.

THE PURPOSES OF BIRD-MARKING.

In its essentials the method consists of the marking of a large number of birds, in some way or other, for the sake of the data afforded by the subsequent reappearance of a small proportion of them. The principle is identical with that of the well-known method of marking fishes as a means of studying their movements and life-histories, while an analogous system has also been utilised in the study of ocean currents.

The method differs from other methods of studying migration in that it approaches the problems from the individual aspect—it begins with individual birds and works from them towards general movements. A marking record implies that there are two or more times in the life of a particular bird when one is able to state with certainty its whereabouts and various other facts, these times being usually those of infancy and of death. When a large number of these records has been collected and correlated, there will exist an array of facts which could not have been ascertained by other means.

To estimate the value of information of this kind, the nature of the problems must first be considered. Perhaps the greatest and most difficult problem of migration is that of its origin—its ultimate cause. To an appreciable extent the purpose served by migration, its *raison d'être*, is known, and the immediate factors which periodically stimulate the migrational habit into being may be surmised : but the question of the origin of the habit still lies completely within the realm of conflicting theory. A matter of theory and hypothesis it must doubtless ever remain, but one may at least put the theories to the test of facts and eliminate those that are found wanting. One thing seems obvious, and that is

that migration is a far too complex and also a far too regular phenomenon to be created anew each season merely under stress of circumstances ; moreover, it is known that migration begins before the need is in the least pressing. The more or less indefinite wanderings of some sea-fowl, the irregular dispersals of some other birds, and the late "weather movements" that occur in severe seasons may be attributed to immediate causes, but a deeper seated origin—not necessarily identical for every species—there must surely be, for the highly developed habit of some of our more typical migrants.

A little consideration will show how speculation regarding this origin is rendered futile for lack of a certain kind of fact. For instance, there is the perhaps rather far-fetched theory that the migrational habit was established by some great meteorological change in the distant past—say by a Glacial Epoch, as has been suggested, which drove the birds resident in northern latitudes towards the Equator, and made them form there a second home : to this they would annually return, it is supposed, after the cessation of the unfavourable conditions had allowed them to re-colonise their original more northerly area as a summer home, the individuals continuing to use the routes followed by the species at the time of the first great movement. Then there is the more recent theory (*cf.* Pycraft, *History of Birds*, 1910, p. 100) that the migrational habit arose from the gradual northward spread of a species from a supposed original southern area in search of fresh feeding and breeding grounds, the birds withdrawing to this original area each winter. Without discussing these theories, it may be noted how their proof or disproof would necessarily rest on a knowledge of the facts concerning the relation of particular summer-quarters to the corresponding winter-quarters, and of the routes connecting them. Thus it is often suggested that the members of a species summering farthest north winter farthest south, and that those midway are more or less stationary (*cf.* Swallow, Section X.) ; but the observer only sees a general southward movement, and typical individuals must be singled out for study before

the question can be answered. Again, there are many cases of species which are found all the year round in the British Isles, but yet are known in autumn both as immigrants from the north and as emigrants to the south, and *vice versa* in spring. Now, except by marking one can hardly hope to be sure whether it is our own summer birds that emigrate, leaving the newcomers to occupy the area for the winter, or whether our own birds are resident while the immigrants pass on over their heads and journey farther southwards. And until this is known, very little of the true nature of migration can be understood.

Some of the questions which may be answered in due course by the marking method are as follows, and most of them have an important bearing on one or other unsolved problem of bird-migration :—To what extent do birds return to their birthplaces to breed, and under what circumstances are new areas colonised? Do birds have definite winter-quarters, and if so, do they seek them year after year? Do young birds seek the same winter-quarters as their parents? Do birds of the same summer area (and same species) seek the same winter area? What relation do the winter-quarters of the northerly-breeding members of a species bear to those of the southerly-breeding members? Do migrants travel by different routes, and if so, what is the nature of these routes? And these questions by no means exhaust the subject.

While urging the value of bird-marking, one must remember that it is only supplementary to other methods, and must not be practised to their exclusion. In passing, too, it may be noticed that bird-marking may incidentally serve other ends than those connected with migration. There are various kindred points relating to distribution for instance, and interesting evidence of the rate of mortality is occasionally afforded. Furthermore, it might be a valuable aid to the study of plumage sequences to acquire a collection of birds which had lived entirely free and natural lives and of which the ages were accurately known.

HISTORICAL SURVEY OF BIRD-MARKING.

Various kinds of marks have been tried or suggested, such as parchment tied under the tail with silk, thin metal discs glued to the tail-feathers, and indelible stamps on the tail-feathers. But all these, besides being clumsy, have the great disadvantage of lasting only until the next moult, and for both convenience and permanence marks on the feet are obviously the best. In early, isolated attempts at marking, such crude means as brass wire or silk thread twisted round the bird's foot were used; but in order to allow of an inscription, a broad metal ring is necessary. As combining extreme lightness with a moderate degree of durability, aluminium is to be preferred, and all the more because it is easily worked and stamped.

Complete rings, such as are used for homing-pigeons, are of little use for marking wild birds, as they can only be placed on very young birds in any case, and not even then in the case of birds with nidifugous young, these having well-grown feet by the time they are hatched. Furthermore, these rings are expensive, as they are cut from aluminium tubing instead of from sheet aluminium, and have to be stamped when in circular shape instead of on the flat. Hence the superiority in every way of the "split ring," which is a band stamped from a sheet and then folded into a circle. The edges are merely pressed together, and a ring of this kind, if of small diameter, will keep its shape without difficulty. Rings of larger size must either be of thicker metal to do this, or must have a clasp of some kind. A very simple pattern is one in which the band is longer, and is not all used in forming the circle; two unequal ends are left to project outwards side by side at the meeting place, the longer being afterwards folded over the shorter, and so forming a clasp which, especially if subjected to pressure with a pair of pliers, will effectually prevent the ring from coming off. It may be mentioned that for Moorhens, Divers, and some other water-birds, the rings require to be bent into oval shape to fit the much compressed tarso-metatarsus.

Birds may be procured for marking in two ways. Either they may be marked as young birds still unable to fly, or they may, when older, be trapped by any non-hurtful means and then marked and released. Notification of their subsequent death or re-capture depends on the address which is stamped on the ring. Some markers have been content with mere initials, but this is very wasteful as it is obvious that it must greatly reduce the number of recorded reappearances and practically exclude the possibility of records from any great distance. Many rings with various insufficient addresses have, indeed, been found on birds but never traced to their origin although widely advertised in ornithological periodicals : and there is, in any event, no great difficulty in stamping a short address even on the smallest ring. In addition to the address each ring should bear its own identification number, which is indeed the key to the whole method. Some markers have used year marks (the year in figures, or some arbitrary sign), but this is only possible where the marking is confined to a single locality and to a single species, and if the birds are all marked when young. Thus, if the rings bearing a certain address are being used solely for young Woodcock on a single estate, a year mark is sufficient ; but where the histories of the birds marked differ from each other, separate identification is necessary. Species is not a reliable factor for this purpose, in that marked birds are often reported by persons quite ignorant on the subject, and it is thus essential that the number on the ring should be all that the marker requires in order to determine the species and history of any marked bird of his that is reported.

The rings soon lose their brightness, especially in the case of water-birds, and are not usually visible on the birds except with strong field-glasses and under favourable conditions. Marking is thus in no way an encouragement to the slaughter of our wild birds : the proportion of ringed individuals to the whole bird population will always remain so small that any shooting of birds for the sake of chance ringed specimens would be ridiculous. It is also worthy of note that many

marked birds are reported as found dead or wounded, or as captured and subsequently released.

The question as to whether the rings have a harmful or disturbing effect on the birds has also been raised. It must be remembered, however, that the ring rests lightly on the insensitive scales of the foot, and is insignificant in weight compared with the size of the bird; the writer's smallest ring, suitable for Sparrows, weighed only about 1/6th of a gramme, and his largest, for Herons, only about 1 gramme (average). A newly marked bird pays little or no attention to the ring, and out of a large number of ringed feet returned to the writer for examination only two or three showed any signs of injury, due in these cases to the use of a wrong size of ring by the marker. The migrational habit might presumably be interfered with in cases where a large mass of weeds or other matter became firmly entangled with the ring—no case of this kind has been reported,—but undue stress can, in any event, never be laid on any isolated record.

The device of marking birds in some way was not infrequently resorted to, in isolated cases and for special purposes, by naturalists of earlier days, and one often comes across stray records. But, so far as the writer is aware, it was not until 1890 that the first systematic scheme was set on foot. In that and many subsequent summers, numbers of young Woodcock were marked on the Duke of Northumberland's estate at Alnwick (14). The rings were inscribed with an "N," and the date (year).

In 1899, Mr. H. Chr. C. Mortensen, of Viborg, Denmark (9, 10, 11, 12, 13), started a more ambitious inquiry, and the Stork, the Heron, the Teal, and the Starling are among the species which he has studied by this method. Mr. Mortensen may, indeed, be regarded as the pioneer of scientific bird-marking, because his inquiry was the first which was thoroughly comprehensive in scope and exact in methods: the use of identification numbers instead of mere year figures was a good innovation which opened up many fresh possibilities, although at the same time involving much more labour in the way of record-keeping.

In 1903, Dr. J. Thienemann (16, 17), Director of the German Ornithological Society's station at Rossitten on the Baltic coast, started an important inquiry. The results obtained in the cases of the Stork and the Hooded Crow, especially, are of great interest. More recently the work has been extended to Heligoland (24, 25).

In 1908, the method was adopted by the Hungarian (State) Ornithological Central Bureau (8, 15). Similar schemes have also been set on foot in Holland (23), and in other parts of the Continent.

Also in 1908, the method was taken up in the United States (1, 4, 5), where, however, it was not previously altogether unknown (2, 3), and in the following year an "American Bird Banding Association" was constituted. The rings issued by the Association bore the inscription "Notify *The Auk*, New York" and a number. More recently the work has been taken over by the Biological Survey of the Department of Agriculture at Washington.

Meanwhile some progress had been made in this country. Several years ago Mr. Richard Tomlinson (22) began marking Starlings at Musselburgh, near Edinburgh. In 1904, Mr. J. H. Gurney marked a number of young Gannets on the Bass Rock (Firth of Forth) with rings inscribed "Bass Rock, 1904." In 1905, Mr. John Hamilton (7) of Baron's Court, Co. Tyrone, Ireland, began marking Woodcock with rings inscribed with "B. C." and the year in figures. Between 1910 and 1916 over 300 Woodcock were marked on Colonel W. W. Ashley's estate in County Sligo, as reported by Captain S. R. Douglas (6). Other proprietors have also marked Woodcock, for instance Lord Ardilaun at Cong, Galway, using rings inscribed "A. Cong," while Sir Richard Graham has used rings inscribed "R. G." for various species of Duck (for the most part hand-reared) marked at Netherby, Cumberland. In 1908, Dr. C. B. Ticehurst (21), following Mr. Mortensen's methods, started marking various birds in the south of England with rings inscribed "Ticehurst, Tenterden." Various other inquiries on a smaller scale have been set on foot at different times.

In 1909, the first efforts were made at bird-marking on a large scale in the British Isles, two inquiries being started independently and almost simultaneously, namely the Aberdeen University Inquiry, now under review, and Mr. H. F. Witherby's scheme (26) in connection with the magazine "British Birds." Of these, the latter is still in progress and close on a hundred thousand birds have been marked: the eventual publication of the collected and analysed results will be an event of great importance to students of migration. It may also be noted that some of the earlier markers merged their work with the new schemes, as Mr. Tomlinson did his with the Aberdeen University Inquiry, and Dr. Ticehurst his with the "British Birds" scheme, the work being profitable only if undertaken on a very large scale.

METHODS OF THE ABERDEEN UNIVERSITY INQUIRY.

Each ring bore the address "Aberdeen University" (contracted to "Aberdeen Univ." on the smallest size), and an identification number. A plain number, sometimes written in two lines, was used where possible, but on the smallest size the need for brevity led to the use of such numbers as "0798," and letter combinations like "299A." After the first experimental stage the rings were made in the following seven sizes, named in fractions of an inch, the first four for ordinary use and the three largest for those markers who had special facilities for ringing sea-fowl and other large birds. The first three sizes were of the clasplless pattern, while the other rings were provided with the form of clasp already described, and had also edges turned outwards as flanges.

1/8th—Finches, Swallows, Titmice, Redbreast, Lark, Sandpipers, Little Tern, etc.

3/16ths—Thrushes, Starling, Lapwing, Snipe, etc.

1/4th—Woodcock, Jackdaw, Black-headed Gull, Kestrel, Teal, Stock-Dove, etc.

5/16ths—Rook, Crows, Owls, Wood-Pigeon, Guillemot, Wigeon, etc.

3/8ths—Herring-Gull, Mallard, etc.

1/2—Gannet, etc.

5/8—Heron.

(All these rings were made by Mr. Samuel Drake, Halifax.)

The numbers, sizes, and destinations of all rings issued to markers were carefully noted and reappearances of marked birds were checked by these notes. Along with the rings were sent schedules on which the data about all birds marked were to be filled in, the following information being asked for :—(1) Number on ring ; (2) Species of bird ; (3) Date of marking and release ; (4) Locality of marking and release ; (5) How obtained (“as young,” etc.) ; (6) Sex and age so far as certain ; and any other remarks, including bracketing together members of the same brood with word to that effect. When the completed schedules were returned, the data were transcribed into ledgers, in which the entries were arranged serially according to the ring numbers, a final column being left blank for the purpose of entering references to the “Case numbers” in the separate card-index of re-appearance records.

When a marked bird was reported as killed or recaptured, the number on the ring was the chief thing required, together with a note of the locality and approximate date of the occurrence. If the ring, with or without the foot, were sent, or if the species were identified, an additional check on the accuracy of the record was provided. Many birds were naturally recorded from the places where they were marked, and the interest of these records depended on the lapse of time and on the other circumstances of the case : cognisance was taken of all records of this kind, however, except when a bird was recorded on the same day, or, in the case of young birds, within the flightless period.

At the outset of the investigation no restriction was made as to the species of birds which were to be marked, and each co-operator was left to make use of whatever opportunities he might have. These opportunities were for the most part confined to young birds as yet unable to fly, but large numbers of birds were also caught in nets set up for the purpose and a few were caught at lighthouse-lanterns or at night on the sea-shore. It was felt that the widest possible scope would provide the fairest test of the value of the

method, and even in the case of purely resident species the extent of local movements was considered worthy of study. Earlier schemes, perhaps more by chance than by intention, had been confined for the most part to a limited number of especially interesting species which had well repaid the labour and cost of marking: no guide, therefore, existed as to the possibilities of a more comprehensive plan of campaign.

It soon became evident, nevertheless, that in many directions the results were very meagre as compared with the number of birds being marked. The scope of the Inquiry was accordingly limited to a few species, selected for a variety of reasons. Three qualities were thought necessary for a species to be classed as a good subject: the birds had to be procurable for marking in large numbers, they had to afford a good percentage of reappearance records, and their migratory movements had to be of interest. Some of the best subjects under the first and second of these headings, such as certain gulls and game-birds, were unfortunately lacking in the third quality, while most of the small passerine birds showed an extraordinarily low percentage of reappearance records apart from cases where they were re-caught by the marker. The species finally selected were the Lapwing, the Starling, the Song-Thrush, the Blackbird, the Woodcock, the Mallard, and the Herring-Gull. To these were added the Redbreast and the Swallow, chiefly because a large stock of the appropriate size of ring remained, and also the Lesser Black-backed Gull in the expectation, never realised, that a large number could be marked. Had the work continued, the tendency would have been to concentrate more and more on the Lapwing and the Starling.

THE INTERPRETATION OF RESULTS.

In the following sections a few species which have afforded interesting and comparatively numerous records are discussed separately and at length. The method adopted in each case has been based on a system of grouping in

accordance with the districts in which the birds were marked, as is explained more fully in Section II. : a distinction has also been maintained between birds marked when young and birds obtained under other circumstances, the latter class being further sub-divided under seasonal headings. The object in view has been to keep together records relating to birds originally belonging to presumably homogeneous groups, and in this way to eliminate errors due to possible geographical differences. But where the grouping has revealed no marked divergency, the separate treatment of the groups is abandoned.

The data thus grouped have been analysed, as a rule, in three different ways. The principal analysis is a seasonal one, the reappearance records of all birds of a particular group, or series of similar groups, being classified according to locality and calendar month. In this main analysis the records of birds recovered in their first, second or subsequent seasons, are treated alike : to exclude any error from this source a second analysis is added in which the classification is by localities and ages. The third analysis is similar to the second, but is based on the calendar year (reckoned from summer to summer) instead of on the year of the bird's life, and it thus affords a check on possible errors due to meteorological differences between one winter and another. The fulness with which the grouping and analyses have been published will be found to vary with the circumstances.

A further section of the report contains a series of brief summaries of the records relating to those species for which the data are insufficient to warrant any more elaborate treatment. Many of these summaries, however, contain more or less isolated records which are of some interest despite the danger that lies in too much importance being attached to occurrences which may possibly be exceptional. The possibility of entirely exceptional individual movements being recorded by the marking method is indeed a point which must constantly be borne in mind by students of the

subject, and isolated records must always be regarded with suspicion and as at best suggesting the theoretical explanations which they seem to indicate. The chances of a faulty record are in themselves almost negligible if the method is carefully and scrupulously followed: wrong ring numbers have frequently been reported and have been speedily detected by being inconsistent with the particulars of marking of the bird to which the number really belonged. There are, however, several records which suggest that the individual birds concerned behaved in an abnormal manner (*cf.* Mallard, Section VI.), and this makes it the more necessary that all deductions should rest on a broad foundation.

It would obviously be desirable to collect a mass of data sufficiently large to be treated statistically, but it cannot be said, in view of the numerous unknown factors, that this has yet been achieved. In the first place there is to be considered the possibility that the material being dealt with is not wholly homogeneous: even in the case of birds of the same species bred in the same area there may be migratory and resident individuals, and therefore possibly migratory and resident races. In the case of birds caught and marked in winter the material is more obviously of mixed origin and may even contain morphologically distinguishable geographical races or subspecies. Not only may some individuals of a species be migratory while others in the same area are resident, but there is no ground for assuming that all the migratory individuals perform similar movements: the movements, indeed, certainly differ in degree and may differ in kind, and it is not even fair to assume that the same individual will act in an identical manner in successive years. It follows, also, that great caution is necessary in deducing routes of migration from records relating to different birds. The obvious temptation is to plot on a map all the localities of reappearance and to consider them as points in a common path, but it is not sound reasoning to say, for instance, that because many

records for a given species come from Ireland and others from Portugal the former country must lie in the route of the birds which travel to the latter.

The most important unknown factor, from a statistical point of view, is the actual mortality rate and its geographical and seasonal incidence. The student of the method, unfortunately, deals only with what may be called the "recorded mortality," and he can only attempt to guess what fraction of the whole it represents. Furthermore, the proportion between true and recorded mortality must vary in different circumstances according to the chances that exist of a dead bird being reported. It may be safely assumed, for instance, that a smaller proportion of actual deaths is reported from foreign countries than from the British Isles, while the fact that birds tend to meet death in different forms at different times of year, especially in the case of species shot for sport, may materially influence the matter. Even were it possible to estimate the true mortality, this would not afford a perfect index of the comparative total numbers of birds present in particular areas at particular times.

The foregoing considerations apply mainly to records which show actual movements, for it is true that in these cases a record usually originates through the death of the bird. But a similar and even more uncertain factor exists in the cases of more or less sedentary birds which are re-caught, often many times, at the places where they were marked. Records of this latter kind depend largely on the activity of the marker himself, who continues to trap birds for further marking and in the process constantly recovers birds he had previously released. Not only may the marker's efforts be erratic for personal reasons, but he will be largely governed by the greater facility with which birds are caught at some seasons as compared with others. An uncertain factor is therefore introduced into the marker's own records of birds recovered, while a much greater one must be allowed for if these records are compared with those

from other sources where special opportunities for obtaining records do not enter into the question.

In the sections which follow the comparisons made with the results of other investigators are by no means exhaustive. The species successfully studied abroad are for the most part unimportant in this country, so far as records go, and the results of the 'British Birds' inquiry (26), which are the most important for this purpose, have as yet been published in collected form only in the case of a very few species.

THE NUMBERS OF BIRDS MARKED DURING THE ABERDEEN UNIVERSITY INQUIRY.

Table I. shows the total numbers of birds of different species marked during the course of the investigation. In the third column the number of reappearance records is given, and in the fourth column the percentage of marked birds which have reappeared. The figures may be regarded as complete for all practical purposes, as additional records have, at the time of writing, become very infrequent. From the numbers and percentages of reappearance records the following are excluded :—

- (a) Records of birds recovered at the same place on the day of marking, or, in the case of young birds, within the flightless period ;
- (b) Incomplete and faulty records which have not been considered sufficiently well established to be included among the results ;
- (c) Second and subsequent records for the same bird.

The percentage is not calculated for species of which less than fifty individuals were marked, and it should be accepted with reserve in cases where the total is less than some hundreds.

Detailed summaries of the numbers marked are given in the case of certain of the more important species discussed at length in the subsequent pages.

TABLE I.

NUMBERS OF BIRDS MARKED AND RECOVERED.

Species.	Total numbers marked.	Total numbers of Reappear- ance Records.	Percentage of Reappearance Records.
Song-Thrush	3,770	52	1·4
Lapwing	3,142	63	2·0
Blackbird	2,641	68	2·6
Starling	1,900	62	3·3
Common Tern	1,352	6	0·4
Redbreast	1,206	61	5·1*
Swallow	1,198	5	0·4
Black-headed Gull	1,150	27	2·3
House-Sparrow	1,041	71	6·8*
Greenfinch	1,021	45	4·4*
Hedge-Sparrow	898	66	7·3*
Chaffinch	811	17	2·1
Blue Titmouse	653	70	10·7*
Willow-Warbler	501	1	0·2
Herring-Gull	461	25	5·4
Mallard	425	95	22·4*
Wren	274	2	0·7
Red Grouse	265	11	4·2
Partridge	256	15	5·9
Mistle-Thrush	230	1	0·4
Sky-Lark	228	0	0·0
Pied Wagtail	217	0	0·0
Spotted Flycatcher	203	2	1·0
Yellowhammer	193	2	1·0
House-Martin	183	0	0·0
Linnet	176	0	0·0
Great Titmouse	172	32	18·6*
Woodcock	156	21	13·5
Meadow-Pipit	150	1	0·7
Wheatear	146	0	0·0
Wood-Pigeon	132	12	9·1
Whitethroat	130	0	0·0
Common Gull	102	3	2·9
Sand-Martin	92	0	0·0
Moorhen	88	2	2·3
Ringed Plover	85	1	1·2
Grey Wagtail	84	0	0·0
Oystercatcher	79	4	5·1

* In the species marked thus the proportion of recoveries must be regarded as abnormally "inflated" owing to special activities on the part of the markers: the remark applies to a lesser extent in certain other cases.

Table I. (*continued*).

Species.	Total numbers marked.	Total numbers of Reappear- ance Records.	Percentage of Reappearance Records.
Redshank	68	0	0.0
Coal-Titmouse	65	1	1.5
Corncrake	65	2	3.1
Goldcrest	61	0	0.0
Rook	54	0	0.0
Common Sandpiper	51	0	0.0
Dipper	50	0	0.0
Curlew	49	2	—
Pheasant	49	3	—
Swift	49	1	—
Chiffchaff	49	0	—
Little Tern	48	1	—
Lesser Black-backed Gull	44	0	—
Bullfinch	42	1	—
Jackdaw	41	3	—
Puffin	40	0	—
Kittiwake	39	0	—
Heron	39	3	—
Redstart	38	0	—
Nuthatch	37	0	—
Sedge-Warbler	35	0	—
Snipe	34	1	—
Sheld-Duck	31	3	—
Garden-Warbler	31	0	—
Cormorant	30	1	—
Reed-Bunting	30	0	—
Teal	28	2	—
Guillemot	22	1	—
Cuckoo	18	1	—
Redwing	14	1	—
Dunlin	13	1	—
Coot	13	1	—
Golden Plover	12	1	—
Wigeon	8	2	—
Barn-Owl	7	2	—
Goldfinch	5	1	—
Long-eared Owl	2	1	—
Miscellaneous (species of which less than 30 were marked and none was recovered)	680	0	—
Total	27,802	879	3.2

II.—THE LAPWING (*Vanellus vanellus* Linn.) :
ANALYSIS OF RECORDS.

Although found all the year round in the British Isles, except in some inland districts, this species is well-known as a migrant. The migrations which may be observed are indeed extremely complex, and they have already been very fully worked out from the point of view of mass movements (*cf.* Eagle Clarke, Report Brit. Assoc. for 1902, p. 277). In addition to autumn movements within the country, there are at that season both immigrations from the north and east and emigration to the south. If very severe weather occurs during the winter there may be a resumption of these movements, even if so late that the normal date for the spring migrations in the opposite direction is close at hand.

The case is typical of a great part of the general phenomena of migration in the British area, and the obstacle which stands in the way of a full understanding of what takes place is the difficulty of ascertaining the respective parts played by the native birds and by the winter visitors and birds of passage from the Continent: to what extent, one asks, do the former remain sedentary while the latter journey on to form the southward stream? And it has already been argued that it is questions of this kind which probe the very nature of the migratory habit.

Fortunately the species has proved a very suitable one for study by the marking method, and the results already obtained show how the data from other sources may be supplemented in important respects. The writer would indeed urge the value of a concentrated investigation of this species, on a larger scale than has yet been tried, as being likely to yield results of very great theoretical interest.

Table II. gives the numbers of Lapwings marked during the course of the inquiry, and the numbers recovered in the respective categories. For the purpose of grouping, the following arbitrary geographical regions have been defined :—

North of Scotland: From Inverness-shire, Nairn, and Moray (inclusive) northwards.

North-East of Scotland: Aberdeenshire, Banffshire, and Kincardineshire.

Central Scotland: The remainder, as far south as the Firths of Forth and Clyde.

South-East of Scotland: Eastern side, south of the Firth of Forth.

South-West of Scotland: Western side, south of the Firth of Clyde.

North of England: From Yorkshire and Lancashire (inclusive) northwards.

South of England: The rest of England and Wales, but, in effect, almost entirely the southern counties. Ireland.

TABLE II.

NUMBERS OF LAPWINGS MARKED AND RECOVERED.

Seasons of marking as chicks.	Numbers marked (by regions).								Total.	Numbers recovered (by seasons of marking).
	N. Scotland.	N.E. Scotland.	C. Scotland.	S.E. Scotland.	S.W. Scotland.	N. England.	S. England.	Ireland.		
1909.....	—	24	1	—	—	—	—	—	25	1
1910.....	17	232	23	2	25	—	—	—	299	10
1911.....	14	379	11	7	1	8	26	—	446	6
1912.....	43	386	38	12	15	88	29	3	614	13
1913.....	157	335	58	29	10	25	1	8	623	19
1914.....	48	395	46	16	3	11	—	31	550	9
1915.....	—	210	—	5	12	12	—	—	239	2
1916.....	—	114	71	27	13	3	7	—	235	1
1917.....	—	65	—	1	17	—	—	—	83	2
1918.....	—	8	—	—	—	—	—	—	8	—
1919.....	—	9	—	—	4	—	—	—	13	—
Not as chicks ...	—	4	1	1	—	1	—	—	7	—
Total ...	279	2161	249	100	100	148	63	42	3,142	63
Numbers recovered (by 'regions' of marking).	3	42	7	—	6	3	2	—	63	2.0%

The percentage of marked Lapwings recovered is thus approximately 2·0, if calculated on the total. But when calculated for separate years the figures vary from 0·4 to 3·3 per cent. if all years in which over 200 were marked be taken, and from 1·3 to 3·0 per cent. if limited to those years in which over 400 were marked. Similarly, the percentage varies from 1·0 to 2·8 when calculated separately for the regions in which over 200 were marked, and is 1·9 in the case of the single region in which the number was much larger. In making comparisons between the numbers of records falling under particular headings, therefore, it would be unsafe to attach significance to any figure which could not be assumed to represent a total of several hundred marked birds. Numerical contrasts are accordingly permissible only between the widest categories, and analysis must be for the most part qualitative rather than quantitative.

As this species is of especial interest, and as it is the first to be discussed here, the records and the various forms of analysis are given in full. Table III. is a complete list of all the reappearances, grouped in the manner already explained.

TABLE III.

LIST OF REAPPEARANCES OF MARKED LAPWINGS.

Season of marking.	Case No.	Date of Reappearance.	Locality of Reappearance.
Marked as chicks in the North of Scotland.			
1912.....	410	20. 8.14	Place of marking.
1913... {	403	ca. 22.11.13	Co. West Meath, Ireland.
	899	early 1.14	nr. Oporto, Portugal.

Table III. (*continued*).

Marked as chicks in the north-east of Scotland.

1909.....	1	13. 6.09	Place of marking.
1910...	60	15. 7.10	Place of marking.
	71	6. 8.10	Place of marking.
	156	† Oct. (possibly Nov.) 10	nr. Oporto, Portugal.
	105	ca. 19.11.10	Co. Tipperary, Ireland.
	106	ca. 22.11.10	Co. Roscommon, Ireland.
	113	29.12.10	nr. Elvas, Alemtejo, Portugal.
	145	ca. 5. 2.11	Co. Cork, Ireland.
1911...	154	13. 2.11	Co. Limerick, Ireland.
	283	ca. 1. 1.12	Co. Roscommon, Ireland.
	271	17.10.11	Queen's Co., Ireland.
	336	7.11.11	Area of marking.
	400	20. 8.13	Place of marking.
1912...	867	3. 7.15	Place of marking.
	824	20. 2.17	Co. Wicklow, Ireland.
	395	2. 1.13	Anglesey, Wales.
	397	ca. 10. 1.13	nr. Guarda, Portugal.
	402	27. 8.13	Place of marking.
	817	24. 2.15	Cardigan, Wales.
1913...	850	8.12.15	Place of marking.
	840	ca. 6. 2.17	Devon, England.
	905	15. 8.13	Place of marking.
	401	20. 8.13	Place of marking.
	405	ca. 24. 1.14	Co. Mayo, Ireland.
	679	ca. 29. 1.14	Landes, France.
	407	ca. 5. 2.14	Co. Tipperary, Ireland.
	408	ca. 8. 2.14	Co. Galway, Ireland.
	681	ca. 20.11.14	Co. Limerick, Ireland.
	818	19. 2.15	Co. Roscommon, Ireland.
1914...	852	13. 1.16	Place of marking.
	887	29.11.18	Place of marking.
	620	early 9.14	Place of marking.
	813	23.12.14	Co. Wicklow, Ireland.
	814	24.12.14	Co. Down, Ireland.
	853	13.12.15	Co. Clare, Ireland.
	821	23. 2.16	Area of marking (a few miles beyond boundary).
	829	13. 3.16	Co. Durham, England.
	870	early 1.17	Co. Cork, Ireland.
	842	8. 2.17	Co. Tipperary, Ireland.
1915...	918	16. 1.20	Co. Durham, England.
	844	24.11.16	nr. Oporto, Portugal.
	881	16.12.17	nr. Oporto, Portugal.

Table III. (*continued*).

Marked as chicks in central Scotland.

1910.....	274	30.12.11	Co. Westmeath, Ireland.
1912... {	398	ca. 20. 1.13	Co. Mayo, Ireland.
	680	23.10.14	Queen's Co., Ireland.
	841	6. 2.17	Co. Sligo, Ireland.
1913... {	406	ca. 2. 1.14	Co. Leitrim, Ireland.
	900	early 1.14	nr. Oviedo, northern Spain.
	832	-, 2.16	N. Cornwall, England.

Marked as chicks in the south-west of Scotland.

1912.....	396	11. 1.13	Queen's Co., Ireland.
1913... {	898	early 1.14	nr. Oporto, Portugal.
	409	9. 1.14	nr. Oporto, Portugal.
1916.....	917	9.12.19	Co. Londonderry, Ireland.
1917... {	886	ca. 10.12.17	Co. Londonderry, Ireland.
	896	ca. 21.10.18	Co. Sligo, Ireland.

Marked as chicks in the north of England.

1911.....	394	ca. 15.12.12	Co. Kildare, Ireland.
1912.....	393	2.12.12	Co. Kilkenny, Ireland.
1913.....	404	ca. 18. 1.14	Landes, France.

Marked as chicks in the south of England.

1912.....	399	19. 2.13	nr. place of marking.
1913.....	920	ca. 8. 5.20	nr. place of marking.

As the records from the various regions appear to be similar in character, the Scottish and north of England birds are treated as a single group for purposes of analysis, the two south of England cases being neglected. Table IV. gives the analysis according to the months in which the reappearances were recorded.

TABLE IV.

SEASONAL ANALYSIS OF REAPPEARANCES OF LAPWINGS MARKED AS CHICKS IN SCOTLAND OR THE NORTH OF ENGLAND.

Month.	Area of Mark- ing.	*North of Eng- land.	*Wales.	*Devon and Corn- wall.	Ire- land.	S.W. France.	N. Spain.	Portu- gal.	Total.
May ...	—	—	—	—	—	—	—	—	0
June ...	1	—	—	—	—	—	—	—	1
July ...	2	—	—	—	—	—	—	—	2
Aug. ...	6	—	—	—	—	—	—	—	6
Sept. ...	1	—	—	—	—	—	—	—	1
Oct. ...	—	—	—	—	3	—	—	1	4
Nov. ...	2	—	—	—	4	—	—	1	7
Dec. ...	1	—	—	—	8	—	—	2	11
Jan. ...	1	1	1	—	6	2	1	4	16
Feb. ...	1	—	1	2	8	—	—	—	12
Mar. ...	—	1	—	—	—	—	—	—	1
Apr. ...	—	—	—	—	—	—	—	—	0
Totals...	15	2	2	2	29	2	1	8	61

(* All records under these headings relate to birds marked in N.E. or C. Scotland.)

The above table reveals the following facts :—

(a) A few birds are recorded in their native areas throughout the winter : considering the favourable conditions for records, the proportion remaining is probably a small one.

(b) Greater numbers are recorded from Ireland from October to February, representing about fifty per cent. of the whole list of records.

(c) Some are recorded from Portugal from October to January : considering the presumably unfavourable conditions for records, the proportion of birds these cases represent is probably a large one.

(d) A few birds are recorded from northern Spain, south-western France, and parts of Great Britain south of the localities of marking, but only, it so happens, in January and February.

(e) Despite the favourable conditions for records there is an entire absence of reappearances at places only a moderate

distance from those at which the birds were marked, and there are only a very few from more distant parts of Great Britain. The birds would therefore appear to be either definitely sedentary or definitely migratory, in the latter case performing comparatively quick journeys rather than gradual movements.

The number of Irish records justifies a supplementary analysis of these in more detail, and this is provided in Table V.

TABLE V.

SEASONAL ANALYSIS OF REAPPEARANCES IN IRELAND OF
LAPWINGS MARKED AS CHICKS IN SCOTLAND OR
THE NORTH OF ENGLAND.

Month.	Ulster.	Leinster.	Connaught.	Munster.	Total.
October	—	2	1	—	3
November	—	1	1	2	4
December	3	4	—	1	8
January	—	1	4	1	6
February	—	1	3	4	8
Total	3	9	9	8	29

From this table it is evident that the records are evenly distributed among the three southern provinces, but are few in number in Ulster. The only Ulster records, and the majority of those from Leinster, refer to the first half of the winter season, while most of the records from the other two provinces occur in the second half: this might be explained either by a local south-westerly movement during the winter or by longer journeys on the part of later arrivals from Great Britain, but the numbers, when thus subdivided, are rather small to be accepted as significant.

The following table analyses the same records as were dealt with in Table IV., but does so in accordance with the ages of the birds at the time of reappearance:—

TABLE VI.

AGE ANALYSIS OF REAPPEARANCES OF LAPWINGS MARKED AS CHICKS IN SCOTLAND OR THE NORTH OF ENGLAND.

Year of the bird's life.	Area of marking.*		England and Wales.	Ireland.	S.W. France and N. Spain.	Portugal.	Total.
	June-Sept.	Oct.-Feb.					
First year ...	6	1	1	16	3	6	33
Second year...	1	1	2	7	—	1	12
Third year ...	2	1	1	3	—	1	8
Fourth year...	—	1	—	1	—	—	2
Fifth year ...	1	—	1	1	—	—	3
Sixth year ...	—	1	1	1	—	—	3

(* See footnote to Table IV.)

The decreasing number of records in successive years naturally follows, of course, from the decreased total of survivors, but it may also represent a lower mortality rate after the first season. The records for the first three seasons suffice to show that age is an unimportant factor in determining the character of the movements performed.

The following table is similar to the foregoing, but is based on calendar years :—

TABLE VII.

ANNUAL ANALYSIS OF REAPPEARANCES OF LAPWINGS MARKED AS CHICKS IN SCOTLAND AND THE NORTH OF ENGLAND.

Year of Reappear- ance.	Area of Marking.		*England and Wales.	Ireland.	S.W. France and N. Spain.	Portugal	Total.
	June-Sept.	Oct.-Feb.					
1909-10...	1	—	—	—	—	—	1
1910-11...	2	—	—	4	—	2	8
1911-12...	—	1	—	3	—	—	4
1912-13...	—	—	1	4	—	1	6
1913-14...	4	—	—	5	3	3	15
1914-15...	2	—	1	5	—	—	8
1915-16...	1	3	2	1	—	—	7
1916-17...	—	—	1	4	—	1	6
1917-18...	—	—	—	1	—	1	2
1918-19...	—	1	—	1	—	—	2
1919-20...	—	—	1	1	—	—	2

(* See footnote to Table IV.)

The above table has been retained mainly as an example of the method employed, for, as has already been pointed out, excessive sub-division of the available total renders the separate items too small to be regarded as quantitatively significant.

Witherby (26) has a number of records, not yet published in collected or analysed form, of a similar nature to those dealt with in this section.

III.—THE WOODCOCK (*Scolopax rusticola* Linn.): ANALYSIS OF RECORDS.

As in the case of the previous species, the Woodcock is found in the British Isles throughout the year, but is known as a migrant to our coasts and from our coasts both in autumn and in spring. The problem is again, therefore, largely that of distinguishing the movements of the native birds from those of the winter visitors and birds of passage.

The results show several interesting features, and the details of the numbers marked, together with a complete list of the reappearances, are accordingly given in this instance also.

TABLE VIII.
NUMBERS OF WOODCOCK MARKED AND RECOVERED.

Season of marking as chicks.	Regions of Marking.							Numbers recovered (by seasons of marking).
	N. Scot-land.	N.E. Scot-land.	C. Scot-land.	S. Scot-land.	N. Eng-land.	Ire-land.	Total.	
1910	2	8	2	1	—	1	14	3
1911	1	1	2	3	—	2	9	2
1912	2	2	36	2	3	—	45	6
1913	—	5	26	1	8	—	40	7
1914	—	1	16	23	—	—	40	2
1915	—	—	2	—	—	—	2	—
1916	—	—	3	—	—	—	3	1
1917	—	—	—	—	—	—	—	—
1918	—	—	—	—	—	1	1	—
Marked otherwise than as chicks. }	—	—	—	2	—	—	2	—
Total	5	17	87	32	11	4	156	21
Numbers recovered (by regions of marking) }	—	4	11	2	3	1	21	13·5%

TABLE IX.

LIST OF REAPPEARANCES OF MARKED WOODCOCK.

Season of Marking.	Case No.	Date of Reappearance.	Locality of Reappearance.
Marked as chicks in the north-east of Scotland.			
1910	284	ca. 26.12.11	nr. place of marking.
1911	292	4. 1.12	Asturias, northern Spain.
1913	427	19. 8.14	nr. place of marking.
1914	621	8.10.14	Place of marking.
Marked as chicks in central Scotland.			
1911	300	28. 9.11	nr. place of marking.
1912 ... {	416	17.11.12	Côtes-du-Nord, France.
	420	28.11.12	nr. place of marking.
	418	ca. 26.12.12	Co. Cork, Ireland.
	426	23. 2.14	Co. Antrim, Ireland.
1913 ... {	421	4. 9.13	nr. place of marking.
	422	4. 9.13	nr. place of marking.
	423	13.11.13	Place of marking.
	425	ca. 20.11.13	Place of marking.
	816	24.12.14	nr. place of marking.
1916	827	25. 1.17	nr. place of marking.
Marked as chicks in the south of Scotland.			
1910	85	22. 8.10	Place of marking.
1914	815	4.12.14	Place of marking.
Marked as chicks in the north of England.			
1912 ... {	417 } same {	13.11.12	Co. Cork, Ireland,
	419 } brood {	28.12.12	Co. Cork, Ireland.
1913	424	7.11.13	nr. place of marking.
Marked as chicks in Ireland.			
1910	108	21.11.10	Place of marking.

For further treatment all the records of Woodcock marked in Scotland and the north of England have been grouped together, the only other record being neglected.

TABLE X.

SEASONAL ANALYSIS OF REAPPEARANCES OF WOODCOCK MARKED AS CHICKS IN SCOTLAND OR THE NORTH OF ENGLAND.

Month *.	Near place of marking.	Ireland.	N.W. France.	Northern Spain.	Total.
August	2	—	—	—	2
September	3	—	—	—	3
October	1	—	—	—	1
November	4	1	1	—	6
December	3	2	—	—	5
January	1	—	—	1	2
February	—	1	—	—	1
Total	14	4	1	1	20

(* No records for March, April, May, June or July.)

The seasonal analysis given above shows that :—

- (a) Some of the Woodcock bred in Scotland and the north of England remain in their native districts throughout the winter.
- (b) Others are recorded from Ireland from November to February, while there are also winter records from north-western France and northern Spain.
- (c) There is an absence of records from Great Britain, other than from within a few miles of the respective places of marking, which suggests that the individuals are either definitely sedentary or definitely migratory.

AGE ANALYSIS.—Sixteen of the birds referred to in Table X. were recorded in their first winters, and four in their second; the former figure includes all the records showing movement, except one from Ireland.

ANNUAL ANALYSIS.—The different types of record are well distributed over several calendar years.

Many records of this species are available from other sources, and these include several curious instances of winter movement in a northerly direction. A bird marked as a chick in Co. Tyrone was recovered in its first winter in Inverness-shire, but others were recorded from Cornwall and from Middlesex in their second winters (7). Birds marked as chicks in Northumberland reached Argyllshire and Forfarshire in their first winters, although another went to Ireland and one was recorded from Brittany in its third winter (14). Several winter records from the places of marking were also obtained during each of these investigations. Of 33 birds marked as chicks in Co. Sligo and subsequently recovered, all, except one from Spain, were reported either from the same neighbourhood or from within sixty miles at most, the records being almost exclusively for the winter months (6). Witherby (26) has also a number of records for this species.

IV.—HERRING-GULL (*Larus argentatus* Pontopp.):

ANALYSIS OF RECORDS.

The Herring-Gull is found all the year round in the British Isles, immature birds remaining in summer in many districts where no suitable breeding-places exist. By purely observational means it is not possible to determine the nature of the wandering movements that appear to take place in winter.

During the course of the Inquiry, 461 birds of this species were marked, 375 of them in the northeast of Scotland. Of the latter, 289 were marked as chicks, and 86 as full-grown birds caught on the shore at night and mainly in September and October 1910, and it is these two categories which have provided nearly all the records. The two sets of reappearances are treated separately below, as they reveal certain differences which are doubtless due to one category consisting entirely of native birds while the other may contain at least a proportion of winter visitors.

TABLE XI.

LIST OF REAPPEARANCES OF HERRING-GULLS MARKED AS CHICKS
ON THE ABERDEENSHIRE COAST.

Season of Marking.	Case No.	Date of Reappearance.	Locality of Reappearance.
1910 ...	153	—, 9.10	Co. Durham.
	89	8. 9.10	Lincolnshire.
	93	13. 9.10	Aberdeenshire.
	94	1.10.10	Lincolnshire.
	92	3.10.10	Norfolk.
	101	ca. 4.10.10	Fifeshire.
	97	ca.12.10.10	Fifeshire.
	121	ca.30. 1.11 (released 7.3.11)	Lancashire.
1911 ...	277	1. 8.13 26.11.11	Nairnshire. } Co. Durham.
	254	7. 9.11	Yorkshire.
	369	14. 2.12	Norfolk.
	373	19.11.12	Yorkshire.
1912 ...	368	ca. 29. 8.12	Banffshire.
	370	9. 9.12	Heligoland.
	372	ca. 15. 9.12	Aberdeenshire.
	371	30. 9.12	Monmouthshire.

TABLE XII.

SEASONAL ANALYSIS OF REAPPEARANCES OF HERRING-GULLS
MARKED AS CHICKS ON THE ABERDEENSHIRE COAST.

Month.	Aberdeen- shire and Moray Firth.	Fife- shire.	Durham and York- shire.	Lincoln- shire and Norfolk.	Lanca- shire and Monmouth- shire.	Heligo- land.	Total.
August	2	—	—	—	—	—	2
September	2	—	2	1	1	1	7
October	—	2	—	2	—	—	4
November ...	—	—	2	—	—	—	2
December ...	—	—	—	—	—	—	—
January	—	—	—	—	1	—	1
February ...	—	—	—	1	—	—	1
Total ...	4	2	4	4	2	1	17*

(* Two records refer to the same bird (Case 121).)

The age analysis shows that all the records refer to the first year of the birds' lives with the exception of two in the second year (Co. Durham and Yorkshire) and one in the fourth year (Moray Firth). The annual analysis merely reflects the numbers marked in the different seasons.

There is a noteworthy absence of any winter records from the district of marking, although the conditions there are favourable and the species gives a good percentage of reappearances. A southward wandering, mainly along the east coast of Great Britain, is clearly indicated, and one bird is shown to have crossed the North Sea to Heligoland as early as 9th September in its first autumn.

The records contrast markedly with those for the Lapwing and the Woodcock in revealing no gap between the native district and a comparatively distant winter area. This may be taken as an expression of a different type of migration, a gradual dispersal with a southerly trend rather than a definite and rapid change of area.

TABLE XIII.

LIST OF REAPPEARANCES OF HERRING-GULLS CAUGHT ON THE SHORE AT NIGHT, MARKED AND RELEASED, NEAR ABERDEEN, IN SEPTEMBER AND OCTOBER 1910.

Case No.	Date of Reappearance.	Locality of Reappearance.
104	15.11.10	Aberdeen.
205	20. 5.11 (and released)	Burray, Orkney. }
	11. 1.13	nr. Aberdeen. }
217	26. 6.11	Aberdeen.
333	7. 3.12	Aberdeenshire.
334	6. 5.12	Asaa, east coast of Jutland, Denmark.
374	27. 6.13	Gera, Thuringia, Germany.
375	28. 4.14	Caithness.

TABLE XIV.

SEASONAL ANALYSIS OF REAPPEARANCES OF HERRING-GULLS
CAUGHT ON THE SHORE AT NIGHT, MARKED AND RELEASED, NEAR
ABERDEEN, SEPTEMBER AND OCTOBER 1910.

Month.	Aberdeenshire.	Orkney Islands and Caithness.	Denmark and Germany.	Total.
November ...	1	—	—	1
December ...	—	—	—	—
January	1	—	—	1
February ...	—	—	—	—
March.....	1	—	—	1
April	—	1	—	1
May	—	1	1	2
June	1	—	1	2
Total ...	4	2	2	8*

(* Two records refer to the same bird (Case 205).)

Of the above, 3 were recovered in the first year after marking, 2 in the second, 2 in the third, and 1 in the fourth.

Although the number of records is not great it is sufficient to show that the Herring-Gulls found on the Scottish coast in the late autumn are of a category different from the native birds, thus bearing out the conclusion that most of the latter move southwards in winter. The differences include winter records from the area of marking and summer records from farther north and from the Continent. Case 205 is of special interest in showing that the bird returned to the same winter area after having been to the Orkney Islands in an intervening summer.

Taking both sets of data together it seems fair to conclude that our native birds tend to wander southwards in winter, mainly within the British area, and that Continental birds appear as winter visitors.

In addition to the two sets of records dealt with above, Herring-Gulls marked as chicks in 1910 in the Lewis, Outer Hebrides (Case 112), and in Berwickshire (Case 232), were recorded from the same localities on 5.12.10 and 3.8.11 respectively.

V.—THE BLACK-HEADED GULL (*Larus ridibundus* Linn.):
ANALYSIS OF RECORDS.

The Black-headed Gull is found all the year round in the British Isles, and, as in the case of other sea-birds, its migratory movements are difficult to distinguish. During the course of the inquiry, 1,150 were marked, 316 of them as chicks in the northeast of Scotland and 294 as chicks in the north of England. The reappearances number 27 in all, or 2·3 per cent.

Of those marked as chicks in the northeast of Scotland, 12 were recovered as follows:—8 from the same or a neighbouring district, 2 from more southerly parts of Scotland, 1 (Case 390) from Co. Down, Ireland, and 1 (Case 116) from near Bayonne, Basses-Pyrénées, France.

Of birds marked as chicks in central Scotland, 4 were recovered as follows:—3 from the same district or slightly to the south, and 1 from the extreme southwest of Scotland.

Of those marked as chicks in the north of England, 10 were recovered, all from the area of marking.

TABLE XV.

SEASONAL ANALYSIS OF REAPPEARANCES OF BLACK-HEADED GULLS
MARKED AS CHICKS IN SCOTLAND AND THE NORTH OF ENGLAND.

Month of Reappear- ances *.	Great Britain.		Ireland.	S.W. France.	Total.
	In or near area of marking.	Over 100 miles south of place of marking.			
June	1				1
July	3				3
August	6				6
September...	6		—	—	6
October	3	1	—		4
November ...	1				1
December ...	—	—	1	—	1
January	—	—	—	1	1
February ...	1	2	—	—	3
Total	21	3	1	1	26

(* No records for March, April, or May.)

Of the above, 22 reappeared during their first year, 2 during their second, 1 in its third, and 1 in its fourth.

The first column of the seasonal analysis indicates that the native birds decrease in numbers in winter in Scotland and the north of England, and there is indeed no evidence from this source that any remain throughout. The other columns show that the birds may reach Ireland and south-western France.

There is also one isolated record (Case 229) of a bird marked otherwise than as a nestling ; one of four birds marked at night on the shore near Aberdeen on 3. 10. 10 was recovered near the same place on 20. 7. 11.

Witherby's records (26) include a Black-headed Gull marked in Yorkshire and recovered from the Azores in its first winter, and another marked as a chick in Cumberland in 1910 and reported from Aberdeenshire, over 200 miles farther north, on 20. 2. 11. The species has also been studied by Thienemann (16), birds marked as chicks at Rossitten, at the south-eastern corner of the Baltic, being reported in winter as far afield as the south of England, the Bay of Biscay, the Balearic Isles, the south of Italy, and Tunis.

VI.—THE MALLARD (*Anas boschas* Linn.): ANALYSIS OF RECORDS.

The Mallard is found all the year round in the British Isles, but it is known to be a winter visitor and a bird of passage as well as a resident, and, as in so many other cases, the first problem is accordingly the separation of the movements performed by the native and immigrant birds respectively. Birds of this species are frequently hand-reared, often from eggs imported from other districts, and it is to cases of this kind that most of the records refer.

Many hand-reared ducklings were marked at Pitcaple Castle, Aberdeenshire, in 1910, but owing to the loss of some of the notes the total is uncertain. Of these, 13 were recovered, ten of them in the same district (seven on the

same estate) during their first winter, one in the same district in the summer of 1912, and the other two as follows:— Case 367 at Gottrüp, Aalborg, northern Denmark, on 18 July 1911, and Case 738 at Osterley, Upland, Sweden (110 km. north of Upsala), on 10 August 1913; the former was described as a mother in charge of a large brood of ducklings.

Of 31 hand-reared ducklings marked at Dunecht House, Aberdeenshire, in 1911, 13 were recovered in the same district (11 on the same estate) in their first season (9 on 31 August, 2 in November, 1 in December, and 1 in January). Of 67 hand-reared ducklings marked at the same place in 1912, 38 were recovered in the same district (36 on the same estate), 35 in their first season (31 in September and October, 2 in November, and 2 in December), and 3 in their second season (1 in June with a brood of young, 1 in October, and 1 in January). Of 11 marked at the same place in 1913 none was recovered. Of hand-reared ducklings marked elsewhere in Aberdeenshire, 3 were recovered in the same district, 1 of them in its first season and 2 in their second.

At Leadenham House, Lincolnshire, 38 hand-reared ducklings were marked in 1912, and 19 of these were recovered on the same estate, 15 in their first winter and 4 in their second. In 1913, 28 were marked there, and 2 of these were recovered at the same place on 4 October of that year. A hand-reared duckling marked in Hampshire was recovered at the place of marking in its first winter.

Of birds marked as wild ducklings, five marked in Aberdeenshire (two), Inverness-shire, Berwickshire, and Co. Monaghan respectively were recovered at the places of marking in their first seasons; and one marked in Aberdeenshire was recovered there on the 1st of August of its third year.

Bearing in mind that most of the birds referred to were hand-reared, the following conclusions may be drawn. With two exceptions all the birds were recovered at or very near

the places where they were marked, and as the percentage is very high, in some instances over fifty, it is evident that the native birds are resident and stationary in high degree, there being no evidence of even local movements.

The two exceptions are of peculiar interest, for in each case the bird was found in a totally different summer area. This fact is difficult to explain in view of the normal sedentary habit of our native birds as shown by the great majority of the records, and it accordingly seems likely that these cases are abnormal. A not improbable explanation would be that the birds became attached to a company of winter visitors of the species and were so led to perform a spring migration to a new breeding area across the North Sea. Witherby (26) has a similar record, an Essex bred bird having been reported from West Prussia in its second summer, and the Sheld-duck (*cf.* Section X.) has also afforded instances of a like nature. Witherby has only one other record of a native Mallard which shows any migratory movement, as against fifty-three wild and twenty-six hand-reared birds recovered at home; but of eight birds marked in Wigtonshire in winter, one was reported in winter from the north of Ireland and seven in summer or late autumn from Finland and Sweden.

VII.—THE STARLING (*Sturnus vulgaris* Linn.):

ANALYSIS OF RECORDS.

The movements of the Starling in the British area, as studied by other methods, have already been fully worked out (*cf.* Eagle Clarke, Report Brit. Assoc., 1903, p. 291). Although found all the year round it is known, both as an autumn immigrant from north-western and from western and central Europe, and as an emigrant to the south at the same season: late "weather movements" in severe winters also occur, including renewed emigration. The corresponding reverse movements may be observed in spring. The first problem is accordingly once more the separation

of native birds from the winter visitors and birds of passage.

The data available as the result of this inquiry fall under the following heads :—Birds marked as nestlings, birds caught and marked in summer, birds caught and marked in winter, and birds caught and marked on migration at lighthouses. The first two categories consist of obviously native birds, the third of a mixture of native birds and winter visitors, as will be seen, and the fourth either of a similar mixture or entirely of winter visitors and birds of passage. The four groups have accordingly been analysed separately, the first two being afterwards discussed in conjunction.

TABLE XVI.

NUMBERS OF STARLINGS MARKED AND RECOVERED.

How marked.	Numbers marked.	Numbers recovered (by categories of marking).
As nestlings	877	15
Caught in summer	76	7
Caught in winter	732	36
Caught at lighthouses on migration	215	4
Total	1,900	62

The percentage of birds recovered, calculated on the total, is thus 3·3. As the numbers of this species marked are relatively large, the higher proportion of reappearances among birds which were caught for marking, as compared with those marked as nestlings, is at first sight rather striking ; the records of the caught birds, however, are to a large extent due to the trapping activities of the markers at particular places, and the number of reappearances has thus become inflated.

TABLE XVII.

SUMMARY OF REAPPEARANCES OF STARLINGS MARKED AS
NESTLINGS IN GREAT BRITAIN.

Reported from near place of marking (maximum distance 25 miles).	
Numbers reported.	Season of reappearance.
4	Summer of marking.
3	First winter.
1	Second summer.
2	Second winter.
3	Third summer.
1	Fourth summer.
Reported at a distance from place of marking.	
Case 457 : Marked at Beaulieu, Hampshire, on 19.5.13 ; shot at Porthleven, Cornwall, on 17.1.14.	

Of Starlings caught and marked in summer in Great Britain otherwise than as nestlings, three reappeared in the summer of marking, three in their first winter, and one in its second summer, in every case at or near the place of marking.

Taking these latter records and those summarised in Table XVII., it is at once evident that at least some of the native Starlings are stationary and that there is little evidence of even local movements of more than a few miles. In one case, only, a journey of about 130 miles was performed. The number of birds marked seems sufficiently high, and the chance of recoveries being reported sufficiently good, for the absence of other records to be regarded as significant.

TABLE XVIII.

SUMMARY OF REAPPEARANCES OF STARLINGS CAUGHT AND
MARKED IN WINTER IN GREAT BRITAIN.

Reported from near place of marking.	
* Numbers reported.	Season of reappearance.
7	Same winter.
10	First summer.
1	Same winter and again in second winter.
7	Second winter.
1	Second winter and again in second summer.
3	Third winter.
1	Fourth winter.
1	Fourth summer.
Reported at a distance from place of marking.	
Case 308: Marked at North Berwick, East Lothian, on 24.12.10; caught at Hartlepool, Co. Durham, on 6.2.12.	
Case 218: Marked at Edinburgh on 20.3.11; killed at Saltdalen, Arctic Norway, on 20.4.11.	
Case 246: Marked at Aberdeen on 20.1.10; found dead at Kvarvi i Salten, Arctic Norway, about 20.8.11.	
Case 455: Marked at Edinburgh on 18.3.11; caught (believed to be nesting) at Vaardalsören, Nord- Trondhjem, Norway, on 5.4.13.	
Case 459: Marked at Edinburgh on 10.2.11; caught near Christiania, Norway, on 11.3.14.	

(* Each individual counted once only.)

The records given in Table XVIII. include instances of birds caught in winter and recovered at the same places in summer, thus affording further evidence of the stationary habit of the native birds. The records of birds recovered in winter, including the one case showing movement, are not significant, as it is impossible to say whether the birds were resident individuals or winter visitors.

The four cases of birds recovered in Norway, three of them from the part of that country lying near the Arctic Circle, serve to indicate the summer quarters of at least some of the birds which reach the British Isles in winter.

Finally there are the following reappearance records of Starlings which were marked on migration at British lighthouses :—

Case 458: Marked at night at the lighthouse, Isle of May, Firth of Forth, on 12.10.13 ;

killed near Omebane, Co. Antrim, Ireland, on 29.1.14.

Case 456: Marked at night at St. Catherine's Lighthouse, Isle of Wight, on 23.11.13 ;

killed at St. Andrew's, Guernsey, on 6.1.14.

Case 822: Marked at night at St. Catherine's Lighthouse, Isle of Wight, on 13.3.15 ;

caught near Walsall, Staffordshire, on 25.12.16.

Case 452: Marked at night at the Skerries Lighthouse, off Anglesey, North Wales, on 23.10.12 ;

caught at Svendborg, Denmark, about 10.5.14.

Of these records, Case 452 was obviously a winter visitor and Case 458 not improbably the same ; the other two may have been native birds, but in view of the conclusions already suggested it is of interest that in all the instances of this kind there is at least a possibility that the subjects were winter immigrants.

Witherby (26) has a number of records not yet published in collected form, and the species has also been largely studied by Mortensen (9, 11, 12).

VIII.—THE SONG-THRUSH (*Turdus musicus* Linn.):

ANALYSIS OF RECORDS.

The very complex movements of this species have been fully worked out by other methods (*cf.* Eagle Clarke, Report Brit. Assoc., 1900, p. 404 ; also B. O. C. Migration Reports), and it is known that different individuals may be respectively residents, summer visitors, winter visitors, or birds of passage. Most of the records here available refer

to undoubted native birds, only a comparatively small number having been marked in winter. The total number marked was 3,770, the highest figure in the inquiry for any one species, and the total number recovered was 52, or 1·4 per cent.

TABLE XIX.

SEASONAL ANALYSIS OF REAPPEARANCES OF SONG-THRUSHES
MARKED AS NESTLINGS IN SCOTLAND OR THE NORTH
OF ENGLAND.

Month of Reappearance.	Year of bird's life in which reappearance occurred, and locality of reappearance.			Total.
	First year.	Second year.	Subsequent years.	
May	—	1 at place of marking.	—	1
June	—	1 at place of marking.	—	1
July	11 near places of marking.	2 at places of marking.	—	13
August	6 near places of marking.	—	—	6
September	1 at place of marking.	1 at place of marking.	(Sixth year) 1 at place of marking.	3
October	—	—	—	—
November	1 in Portugal.	—	—	1
December	1 forty miles south of place of marking.	—	—	1
January	1 in Sussex.	1 at place of marking.	(Third year) 1 at place of marking.	3
February	1 at the Eddy- stone Light- house.	—	—	1
March	—	—	(Ninth year) 1 at place of marking.	1
April	1 at place of marking.	2 near places of marking.	—	3
Total.....	23	8	3	34

The following fuller particulars of certain cases included above may be added :—

Case 102 : Marked as a nestling in Aberdeenshire on 4.6.10 ;
shot 70 miles north of Lisbon on 6.11.10.

Case 613 : Marked as a nestling in Aberdeenshire on 10.6.11 ;
found dead at Arundel, west Sussex, end of January 1912.

Case 596 : Marked as a nestling in Aberdeenshire on 19.5.13 ;
recovered at the Eddystone Lighthouse, in company with
other birds, on the night 27/28.2.14.

Case 922 : Marked as a nestling on the Isle of May, Fifeshire, on
20.5.11 and found dead at the same place in March 1920—
nearly nine years later.

Of Song-Thrushes marked as nestlings at Beaulieu, Hampshire, in April 1912, one (Case 617) was caught at Bridgewater, Somerset, on 2.11.12, and one (Case 597) was recovered at St. Catherine's Lighthouse, Isle of Wight, on the night 9/10.2.13. Three birds marked as nestlings at Dawlish, Devon, were recovered at the same place in winter, two in their first year and one in its second.

Thirteen Song-Thrushes marked in Great Britain otherwise than as nestlings were recovered, all at the places of marking. Two of these had been marked in summer and reappeared respectively in the summer of the fourth year and in the winter of the first. Of the remainder, all marked in winter, two reappeared in summer, four in the winter of marking, four in subsequent winters, and one was recorded six times in all during the following summer and winter.

The data given above suffice to show that some of the British native Song-Thrushes (belonging to the race *Turdus musicus clarkii* Hartert) are resident, while others are summer visitors. The number of positive records showing migration is not large, but the scarcity of winter records from the area of marking, in the case of birds marked in summer, may perhaps be taken as evidence of a negative kind in support of the same conclusion.

Witherby's records (26) include a Song-Thrush which migrated from Yorkshire to the north of France, and another which travelled from Westmorland to Co. Clare, Ireland.

IX.—THE HEDGE-SPARROW (*Accentor modularis* Linn.):

ANALYSIS OF RECORDS.

The total number of birds of this species which were marked is 898, and 66 of these, or 7·3 per cent., were recovered. A further analysis of these figures, however, reveals a striking fact which must be borne in mind when considering the results: of 142 marked at East Warriston, Edinburgh, 42, or 29·6 per cent., were recovered, many of them several times; of 131 marked at Beaulieu, Hampshire, 17, or 13·0 per cent., were recovered; and of the 625 marked elsewhere, 7, or only 1·1 per cent., were recovered. The records for the East Warriston and Beaulieu birds are largely accounted for by the continued trapping activities of the markers at these places, especially at the former, and the small chances of a bird being recorded through any other agency make it quite impossible to lay stress on such negative evidence as the absence of records from places other than those of marking. Similar considerations apply to certain of the species more briefly discussed in Section X., notably the Greenfinch, the House-Sparrow, the Great Titmouse, the Blue Titmouse, and the Red-breast.

All the records obtained refer to birds recaptured at the places of marking, and the seasons of reappearance are shown in the following table: the records for Scotland form the majority, but those for England are given in the same table as no differences are apparent.

It may be concluded that at least some of the native Hedge-Sparrows are absolutely sedentary, but it has already been pointed out that the absence of records showing movement on the part of other individuals may be without real significance. (It may be added that the ordinary observer

TABLE XX.

SUMMARY OF RECORDS OF HEDGE-SPARROWS MARKED IN GREAT
BRITAIN AND RECOVERED AT THE PLACES OF MARKING.

How marked.	Season of reappearance.	*Numbers recovered.
As nestlings.....	Same summer only.....	1
	Same summer and 1st winter	1
	1st winter	3
	2nd summer	1
	5th summer	1
	Total.....	7
Caught and marked in summer.	Same summer only.....	2
	Same summer and 1st winter	2
	Same summer, 1st winter, and 2nd summer	1
	1st winter	3
	Total.....	8
Caught and marked in winter.	Same winter only	28
	Same winter and 1st summer	2
	Same and 2nd winters	2
	Same. 2nd, and 3rd winters	2
	Same and 3rd winters	1
	1st summer.....	2
	2nd winter	9
	2nd and 3rd winters	1
	2nd summer	1
	3rd winter	3
	Total.....	51

(* Each individual counted once only.)

cannot be expected to distinguish between the resident British race and the Continental race which is known as a migrant in the British Isles.)

X.—SUMMARY OF RECORDS OF OTHER SPECIES.

SWALLOW (*Hirundo rustica* Linn.).

There are three records of birds of this typically migratory species returning to the localities of marking in the following seasons. Two were marked as nestlings and one as an adult, the details being as follows :—

Case 15: Caught, marked, and released as an adult bird at a farm in Kent on 29 June, 1909; recaptured at the same farm on 14 June, 1910.

Case 201: Marked as a nestling in Kincardineshire on 21 August, 1910; found with a broken wing in the same village on 22 May, 1911.

Case 483: Marked as a nestling at Beaulieu, Hampshire, on 6 September, 1912; caught in an outhouse, where it was believed to be nesting, at Ringwood, Hampshire, about eighteen miles from its birthplace, on 2 May, 1913.

There are also two records of birds marked as nestlings being recorded from the places of marking in their first season: in one instance (Case 871) the date of recovery was as late as the 30th of October.

It would be of special interest to compare the winter-quarters of British-bred Swallows with those of Swallows from other countries, in view of the statement made by Hartert (Vög. der paläarkt. Fauna, i. p. 801) that “doubtless the most northerly dwellers migrate further south while the breeding birds of the Atlas Mountain region probably go only to the oases of the Sahara for the winter.” Unfortunately the proportion of records of value must always be very small, although Witherby (26) has had three marked Swallows of British origin reported to him from South Africa.

GREENFINCH (*Chloris chloris* Linn.).

The only record revealing any movement is of a bird (Case 311) caught and marked at Inverurie, Aberdeenshire, on 23 August, 1910, and recaptured at Melvich, Sutherland, about 12 February, 1912. The remaining

forty-four recorded birds all reappeared at the places where they were marked, or at most two or three miles distant.

Of three birds marked in Scotland in summer, one marked as an adult and one as a nestling were recovered in the following winter, and one marked as a nestling was recovered in summer two years later. Of birds caught and marked in Edinburgh during the period December–March, in various calendar years, twenty-eight reappeared in the same winter, four in their first spring (April), and six in the following winter. In several instances the birds were recorded more than once. There are also three other isolated records of little interest.

As most of the birds were marked in winter the results recorded above do little to help to differentiate the native birds from those that are winter visitors from the Continent.

GOLDFINCH (*Carduelis carduelis* Linn.).

One (Case 847) marked as a nestling near Dawlish, Devonshire, on 5 August, 1913, was found dead at the same place on 4 February, 1915.

CHAFFINCH (*Fringilla cœlebs* Linn.).

All the reappearances of marked birds of this species refer to the respective localities of marking, in most cases actually to the same gardens. One bird caught and marked in summer in Argyllshire was recovered in the third winter; one marked as a nestling in Kincardineshire was recovered in the same summer; one marked as a nestling in Devon was recovered in the following summer; one marked as a nestling in Hampshire reappeared four times in its first winter; and one caught and marked in Hampshire in summer reappeared once in the second winter and twice in the third.

Of birds caught and marked in Hampshire in winter, three reappeared there in the same winter and six in the following one: one of the latter also reappeared in September nearly four years after the date of its marking. One of these birds reappeared no less than seven times during a single season.

Although all the birds marked in winter were, with one exception, recorded again only from October to March, this may well be attributed to the netting activities of the marker at that time of year. Two birds caught and marked in Aberdeenshire in winter were recovered in the following winter, and one marked early in March reappeared six weeks later.

HOUSE-SPARROW (*Passer domesticus* Linn.).

Seventy-one marked birds of this species were recovered, all of them at the places where they were marked, which were for the most part in Scotland although several records refer to Hampshire. Most of the birds were caught and marked in winter and recovered in the same season of the year, but there is a good proportion of records of birds marked in winter and recovered in summer and *vice versa*. The longest interval was three and a half years. The records tend to bear out the supposition that the species is practically sedentary despite its occasional appearance at light-stations.

GREAT TITMOUSE (*Parus major* Linn.).

All the reappearances of marked birds of this species refer to the places of marking, usually to the identical gardens. One bird marked as a nestling in Aberdeenshire was recovered in the following winter; two birds marked in Bute in spring were recovered in their first and fourth winters respectively.

Twenty-eight birds caught and marked in Scotland (two localities in Aberdeenshire and one in Mid-Lothian) in winter, were recovered as follows:—sixteen during the same winter, one in the first summer, five in the second winter, one in the second winter and second summer, one in the second summer, two in the second and third winters, and two in the third winter only. One bird caught and marked in Hampshire was recovered five times during the following winter. The preponderance of winter reappearances is doubtless largely due to the netting activities of the markers at that season, most of the records coming from that source.

BLUE TITMOUSE (*Parus cæruleus* Linn.).

A total of 653 birds was marked, of which 70, or 10·7 per cent., reappeared. All the birds were recovered at the places of marking, and in nearly every case owing to the trapping activities of the markers. The figures for the species indeed illustrate exceedingly well the point already brought out in the case of the Hedge-Sparrow (*cf.* Section IX.). Of 41 caught and marked in winter at Old Aberdeen, 37, or 90·2 per cent., were recovered; of 15 caught and marked in winter at East Warriston, Edinburgh, 8, or 53·3 per cent., were recovered; of 43 caught and marked in winter at Beaulieu, Hampshire, 19, or 44·2 per cent., were recovered; while of 554 marked otherwise than under these conditions—mainly in summer—6, or only 1·1 per cent., reappeared.

In all, 66 birds marked in winter reappeared in winter, in some cases as late as the third year, and three marked as nestlings and one caught and marked in summer also reappeared in winter. Individual birds were frequently recovered many times, in one instance on eleven separate occasions. All the records refer to Great Britain.

MISTLE-THRUSH (*Turdus viscivorus* Linn.).

One (Case 619) marked near York as a nestling was recovered in the same district in December of the same year.

BLACKBIRD (*Turdus merula* Linn.).

During the course of the inquiry 2,641 Blackbirds were marked and 68 were recovered, making 2·6 per cent. The only instance of migratory movement is Case 278, which was marked as a nestling in Aberdeenshire on 12.6.11 and found dead near Gateshead, Co. Durham, on 7.11.11. All the other records refer to birds recovered at or near the places of marking, including a few from distances up to about thirty miles. Of birds marked in Great Britain as nestlings, thirty-one were thus recovered, thirteen of them during the

summer of marking, seven of them in subsequent summers, ten of them in subsequent winters, and the remaining one in its first winter and again in its second summer. Of birds marked in Great Britain otherwise than as nestlings, sixteen that were marked in summer and nineteen that were marked in winter reappeared, and the records show a similar even distribution between subsequent summers and winters as in the case of those marked as nestlings. One bird caught and marked in Ireland in winter was recovered at the place of marking in its fourth winter.

These records show that at least some of the native Blackbirds are resident and stationary, and there is indeed only one case giving evidence of appreciable movement. Witherby's records (26) include a Blackbird marked in Dumfries-shire and recovered in Co. Down, Ireland, in its second winter.

REDBREAST (*Erithacus rubecula* Linn.).

Of the 1,206 birds marked, 61, or 5.1 per cent., were recovered—all of them at the places of marking and indeed very frequently in the identical gardens. In many instances individual birds were recaptured several times. Of eighteen birds marked in Great Britain in summer, as nestlings or otherwise, one was recovered in the same summer, three in subsequent summers, and fourteen in winter. Of forty-two marked in Great Britain in winter, twenty-six were recovered in the winter of marking, thirteen in subsequent winters, and three in summer. There is also one Irish record of no interest.

The records show that at least some of the native Red-breasts are absolutely sedentary. There is no evidence of even local movements, but much stress cannot be laid on the absence of records, owing to the fact that the chances of a bird of this species reappearing seem to be very small apart from the marker's own recaptures. Figures illustrating this point have already been given for the Hedge-Sparrow and the Blue Titmouse, to which similar considerations apply.

SPOTTED FLYCATCHER (*Muscicapa grisola* Linn.).

Two adult birds (Cases 484 and 485) caught on their nests near Edinburgh were recaptured at the same place a year later. As this species is completely absent from the British Isles in winter the records are of some interest as evidence of migrants returning to the same breeding-places.

MEADOW-PIPIT (*Anthus pratensis* Linn.).

One (Case 275), considered by the marker to be a male of the year, was caught, marked and released near Bromford, Warwickshire, on 20 September, 1911, and was shot near Lisbon, Portugal, about 7 December of the same year.

Witherby (26) has three records of British-bred Meadow-Pipits from south-western France, one from Portugal, and no winter records from the British Isles. (The species is found all the year round in the British Isles, but is known in autumn both as an immigrant and as an emigrant.)

SWIFT (*Apus apus* Linn.).

An adult (Case 919) caught and marked in its nesting-hole in Ayrshire on 11.6.14, was recaptured at the same place on 5.6.18.

CUCKOO (*Cuculus canorus* Linn.).

One (Case 251) marked as a nestling near Newark, Nottinghamshire, on 30 June, 1911, was shot on the Sea Bank at Boston, Lincolnshire, on 2 September of the same year.

BARN-OWL (*Flammea flammea* Linn.).

Two nestlings of the same brood (Cases 453 and 454) marked in Staffordshire on 22 July, 1913, were recovered in the same district about 6 January and 4 March, 1914, respectively.

HERON (*Ardea purpurea* Linn.).

Three marked as nestlings, in Aberdeenshire, Dumbartonshire, and Yorkshire respectively, were recovered within short distances of the places of marking during either their first or second winters.

Mortensen (11) has found this species highly migratory, Danish-bred birds reaching southern England, Brittany, and southern Spain.

SHELD-DUCK (*Tadorna tadorna* Linn.).

Of a brood of ducklings marked in Hampshire on 16 July, 1912, the following reappeared :—

Case 447 : 10 Feb. 1913, Saltash, Cornwall.

Case 448 : ca. 12 Aug. 1913, Büsum, Schleswig-Holstein,
Germany.

Case 906 : 18 Aug. 1917, Mouth of the Weser, Germany.

The eastward wandering in two cases is curious and suggests that of the two Mallards previously referred to in Section VI.: the explanation already put forward might also apply here, although in the absence of other records one cannot be so certain that these are exceptional instances.

TEAL (*Querquedula crecca* Linn.).

One (Case 446) marked as a duckling in Inverness-shire on 29 May, 1912, was shot in County Waterford, Ireland, on 5 February, 1914. The only other record is of no interest.

Teal marked in Denmark by Mortensen (10), having been caught in decoys on autumn passage, have been recovered in Holland, England, Ireland, and France, and in southern Spain and northern Italy.

WIGEON (*Mareca penelope* Linn.).

Of a brood of five ducklings marked in the east of Sutherland, Scotland, on 19 June, 1909, the following were recorded :—

Case 4 : 3 Sept. 1909, Ulrum, Groningen, Holland.

Case 118 : ca. 2 Jan. 1911, River Trent, Nottinghamshire.

The species is chiefly known in the British Isles as a winter visitor or bird of passage, and this slight evidence of movement on the part of native birds is of some interest.

WOOD-PIGEON (*Columba palumbus* Linn.).

Twelve birds marked as nestlings in various parts of Scotland were subsequently recorded, ten of them from

within a few miles of the places of marking. Of these ten records, four refer to the summer of marking, two to the following winter (February and March), three to subsequent summers (after 1, 2, and 3 years respectively), and one to the bird's third winter (February). The remaining cases exhibit movement :—

Case 440 : Marked as a nestling at Inverurie, Aberdeenshire, on 5 June, 1913 ;

shot near Montrose, Forfarshire, in November of the same year.

Case 441 : Marked as a nestling at Beith, Ayrshire, on 27 May, 1913 ;

shot at Shifnal, Shropshire, on 23 January, 1914.

The species is both a resident in the British Isles and a winter visitor in very variable numbers : the local movements of the two categories are not distinguishable by other methods than that of marking.

GOLDEN PLOVER (*Charadrius apricarius* Linn.).

One (Case 263) marked as a chick in Inverness-shire on 21 May, 1911, was shot in County Mayo, Ireland, about 13 October of the same year.

RINGED PLOVER (*Ægialitis hiaticula* Linn.).

One (Case 825) marked as a chick in East Lothian was recovered in the same district after four years and eight months.

DUNLIN (*Tringa alpina* Linn.).

One (Case 411) marked as an adult caught on its nest on the Pentland Skerries, Orkney Islands, was recovered within fifty yards of the same spot ten months later.

Dunlins caught on passage at Rossitten, East Prussia, have been recorded by Thienemann (16) from Essex, the Gironde estuary, and the Rhone delta.

CURLEW (*Numenius arquata* Linn.).

One (Case 412) marked as a chick in Inverness-shire on 1 June, 1912, was shot in County Tyrone, Ireland, on the

5 August of the same year. One (Case 921) marked as a chick in Northumberland on 18 June, 1912, was found dead in the same district on 6 May, 1920.

OYSTERCATCHER (*Hæmatopus ostralegus* Linn.).

One (Case 856) marked as a chick in Aberdeenshire on 11 June, 1910, was recovered in Cheshire on 3 December, 1915. Two (Cases 413 and 414) marked as chicks in Aberdeenshire in June 1912, were shot in Ireland in the same autumn, one at Broadhaven Lighthouse, County Mayo, on 22 August, and the other at Blackrock, County Cork, in October. A fourth (Case 904) was marked as a chick in Sutherland on 29 May, 1913, and recovered in the neighbouring county of Ross about 13 August of the same year.

An autumn migration of Oystercatchers from Scotland to Ireland was already known to occur, but whether partly of native birds or wholly of winter visitors was not established. The early dates in two cases are of interest.

SNIPE (*Gallinago gallinago* Linn.).

One (Case 415) marked as a chick in County Fermanagh, Ireland, on 12 June, 1913, was shot in County Longford on 6 October of the same year.

COMMON TERN (*Sterna hirundo* Linn.).

One (Case 392) marked as a chick on the Aberdeenshire coast on 31 July, 1912, was picked up in the Firth of Forth about 7 September of the same year. Five others marked as chicks in various parts of Scotland were recovered near places where they were marked after intervals of less than two months (two on 21 August, and the others even earlier).

LITTLE TERN (*Sterna minuta* Linn.).

One (Case 678) marked as a chick on the Yorkshire coast on 10 July, 1914, was recovered in Portugal in September of the same year.

COMMON GULL (*Larus canus* Linn.).

One (Case 376) marked as a chick on the mainland, Shetland Isles, on 22 June, 1912, was recovered in Norfolk on 8 September of the same year. Two (Cases 253 and 276) marked as chicks in Argyllshire in July 1911, were recovered later in the same year in the neighbouring county of Dumbarton, one on 11 September and the other on 30 December.

GUILLEMOT (*Uria troille* Linn.).

One (Case 111) marked as a chick on the Aberdeenshire coast on 11 July, 1910, was shot on 29 November of the same year twelve miles north of Gothenburg, Sweden. (Little is known of the movements of this species, which frequents the open sea from August until March.)

CORNCRAKE (*Crex crex* Linn.).

One (Case 249) was caught and marked as an adult bird in Aberdeenshire on 3 September, 1910, and was recovered in September 1911 at Naillat in the Department of Creuse, France. A second (Case 428) was marked as a chick in Cumberland on 8 July, 1912, and was recovered on 21 September of the same year at Béguey-sur-Garonne, France.

MOORHEN (*Gallinula chloropus* Linn.).

One (Case 837) marked as a chick in Aberdeenshire on 4 June, 1911, was found dead in Lancashire on 21 February, 1917. A second (Case 429), also marked in Aberdeenshire, was recovered at the place of marking a year later.

RED GROUSE (*Lagopus scoticus* Latham).

Three imported birds turned down in Inverness-shire on 21 October, 1911, were recovered near the place of marking after intervals of seven, ten, and twenty-three months, respectively. Four marked as chicks near Crieff, Perthshire, in 1913, were shot in the same district, two in the autumn of 1914 and two in the autumn of 1915 : of the former both had wandered a few miles, and of the latter one

(Case 432) was recovered about fifteen miles distant in a north-easterly direction (Glenlyon). Three others marked as chicks in Scotland were shot in their first season near the place where they were marked. One (Case 857) marked as a chick at Benarty Hill, Fifeshire, on 31 May, 1913, was caught in snares at Forgandenny, Perthshire, on 6 August, 1915, a distance of fourteen miles.

PARTRIDGE (*Perdix perdix* Linn.).

Fifteen marked in Scotland, all as hand-reared or imported birds, were recovered at the places where they were marked.

Of these, twelve records can be grouped as follows :—

Birds imported from Hungary and turned down in Perthshire on 14 or 15 February, 1913; recovered on 12.9.13 and 18.9.13 (two), and about 13.10.13 (two), 13.11.13, 31.1.14, and 28.12.16 respectively.

Birds imported from Bohemia and turned down in Aberdeenshire on 30 November, 1910; recovered during the same winter, in April 1911, on 28.9.11, and on 14.10.13 respectively.

OTHER RECORDS.

There are also records for the following species :—Jackdaw and Pheasant, three each; Yellowhammer and Wren, two each; Bullfinch, Coal-Titmouse, Redwing, Willow-Warbler, Long-eared Owl, Cormorant, and Coot, one each. Little or no interest attaches to any of these cases.

XI. -CONCLUSIONS REGARDING BIRD-MIGRATION.

Specific Conclusions.—A number of conclusions have been reached affecting the status of various species as migrants in the British area. These have already been expressed in the preceding sections, and any detailed recapitulation would be superfluous.

Return of Migrants to the same Summer-Quarters.—The Swallow, the Spotted Flycatcher, and the Swift have afforded definite instances of this fact, previously shown in certain other cases and for long presumed on general grounds. Other records of birds recovered at the places of marking in subsequent summers are invalidated by lack of grounds for

the assumption that the individuals had left the respective localities in the interval. There are two instances of Mallard being found in a totally different area in subsequent summers, but as all the other evidence points to the native birds of that species being sedentary, the explanation of these as exceptional cases, already suggested, seems to be justified.

Return of Migrants to the same Winter-Quarters.—The only definite evidence on this point rests on a single record and refers to the Herring-Gull, a species which can scarcely be regarded as a typical migrant.

Winter-Quarters of Native British Birds.—The records for a number of the species dealt with indicate, at least in part, the winter-quarters of individuals which are summer visitors either to the British Isles as a whole or to particular districts therein. The small chances of obtaining records from, say, northern Africa make it impossible to regard these indications as exhaustive.

Summer-Quarters of Winter Visitors to the British Isles.—The only very definite evidence under this heading refers to the Starling (*q. v.*).

Part taken in Movements by Native British Birds.—As has already been repeatedly pointed out, it is typical of migration in the British area, which is a “half-way house” in Temperate Europe, that species should be present throughout the year, although known in autumn both as immigrants from the north and east and as emigrants to the south, and *vice versa* in spring. Some light has been thrown on the part played in these movements by the native British birds of several species. More evidence is still required, but in the cases of the Mallard and the Starling there is already a strong presumption that the native birds are sedentary and that any southward emigration which is observable must therefore be on the part of birds that have already come from more northerly or easterly summer areas. In other cases, such as those of the Lapwing and the Woodcock, the participation of the native birds is clearly proved. The theoretical interest of the point has already been discussed in the introduction.

“*Individual Migration.*”--This term is used to express the fact that individual birds belonging to the same species and native to the same area may behave differently as regards migration. The point has been very clearly brought out by the marking method, and in the preceding sections numerous instances are given where individuals have sought different winter-quarters, or where some individuals have remained sedentary, while others have migrated. In the case of Lapwings bred in Aberdeenshire and the neighbouring counties, for example, some have wintered there, some in Ireland, and some in Portugal. Theoretically, the question seems to present two alternatives. If all the birds are naturally endowed with a similar instinct, what is it that stimulates this to greater activity in some cases than in others where the general conditions are apparently the same? And if different instincts, or degrees of instinct, are inherited, how may this be accounted for—are there different *gentes* not morphologically distinguishable, but differing in constitution and temperament in ways not at present definable, as, for instance, a sedentary *gens*, an Ireland-seeking *gens*, and a Portugal-seeking *gens*? (Or, as a very unpromising alternative, must we re-examine the apparently overwhelming evidence in favour of migration being an inborn-habit rather than a direct effect of immediate stimuli?)

Types of Migration.—An interesting point has been brought out in the case of several species, namely, the absence of records of marked birds from what may be called “intermediate distances,” a bird being usually recorded either from its native locality or from a comparatively great distance. In these cases it accordingly seems probable that individual birds are either quite sedentary or very definitely migratory, gradations being absent. In other instances, such as that of the Herring-Gull, the records clearly reveal a rather indefinite wandering tendency.

Sedentary Birds.—Some interest attaches to the evidence of the extreme nature of the sedentary habit of many individual birds, these being often recorded time after time, over a period of years, from the very same gardens.

XII.—CONCLUSIONS REGARDING THE VALUE OF THE
METHOD OF BIRD-MARKING.

It is thought that the results and conclusions set forth in the preceding sections, together with the data collected by other workers, will be considered sufficient proof of the value of the marking method as a means of obtaining a certain type of fact regarding the problems of bird-migration. At the same time it will be evident that the labour involved is very great and that the percentage of marked birds recovered is generally very small, while the results are in some cases largely invalidated by inherent defects which the method displays under certain circumstances. Various reservations must accordingly now be made in appraising the method, and the conclusion that must be drawn is that it would be advisable to restrict its further practice to those lines which have been shown to be comparatively fruitful in reliable and interesting results.

The continuance of promiscuous marking is likely, of course, to yield a small proportion of isolated results that will possess an undoubted interest. But it is questionable whether records of this kind will ever adequately repay the time, labour, and money expended on the actual task of marking. Certainly these records will not equal in value the results which can be obtained by more systematic study on restricted and carefully selected lines.

It has been stated in the introduction that three qualities were considered essential, on *à priori* grounds, before a species could be regarded as a suitable subject for this kind of study: it must be available for marking in large numbers, it must afford a good percentage of reappearance records, and its migratory movements must present features worthy of investigation. To these may now be added a fourth point, namely that the circumstances must be such as will not tend to invalidate the results by the introduction of too many uncertain elements.

Quantitative as well as qualitative analysis must be aimed at in spite of the obstacles that seem to lie in the way. As has

already been pointed out, the number of birds in a given area at a particular time is only imperfectly represented by the mortality rate, because the latter varies with time of year and other circumstances. Moreover, the true mortality rate is still less adequately represented by the "recorded mortality" rate which forms the *datum* of the method. These difficulties cannot be altogether overcome, but they will be minimised where the problem takes the form of comparisons between sets of results collected under approximately similar circumstances. There is virtue, too, in the mere numbers of records, and concentration of effort should lead to an increase in these for the particular species selected. Where the total numbers are small the quantitative errors due to mere chance will obviously be great, and the extent of the possible discrepancies from this source is strikingly shown by the figures for the Lapwing (*cf.* Table II. p. 485), one of the best subjects for study.

The selection of suitable species does not exhaust the question, for it is also important that the reappearance records should fall into groups which are homogeneous as regards the circumstances of marking. A concentration of effort on particular areas would therefore have its advantages. The question of season is probably still more important, and a serious objection must be considered in the case of most marking of birds at other times than the breeding season, namely, that the birds marked may consist of a mixture of sedentary natives and visiting immigrants from other summer-quarters.

There are various other points that need not be laboured. The unreliability of isolated records which may well be abnormal will, for instance, be sufficiently obvious. The danger of laying stress on negative evidence except in very clear cases may also be mentioned: in considering the Hedge-Sparrow and the Blue Titmouse, for instance, it has been seen that almost negligible numbers of marked birds of these species are recovered where no special efforts are made, whereas an exceedingly high figure may result if continuous trapping be carried out. The absence of records from a

particular area is accordingly significant only when it can be shown that the species tends to yield a good proportion of records under circumstances such as are prevalent there.

It is therefore thought probable that promiscuous marking has now had a sufficient trial in the British Isles and that it will be found, more especially when summarised results of the "British Birds" scheme have also been published, that the necessary data are now available for the formulation of more definite plans of campaign for concentrated action. If possible, definite problems should be kept in view and the work of marking should be systematically directed to the accumulation of relevant facts. The Lapwing, to give a single instance, would assuredly yield results of the highest theoretical interest if it could be marked simultaneously and in a large number of selected districts—say, the north of Scotland, the south of England, Ireland, Holland, a district of France, and a district of Norway.

XIII.—REFERENCES.

(References not relating to the marking method are given in the text.)

- (1) BALDWIN, S. Prentiss (1919).—"Bird-Banding by Means of Systematic Trapping." (*Abs. Proc. Linn. Soc. New York*, xxv., 23.)
- (2) BARTSCH, Paul (1904).—"Notes on the Herons of the District of Columbia." (*Smiths. Miscel. Coll.*, xlv., 104.)
- (3) COLE, Leon J. (1902).—"Suggestions for a Method of Studying the Migrations of Birds." (*Third Report of the Michigan Academy of Science*, 67.)
- (4) — (1909).—"The Tagging of Wild Birds as a Means of Studying their Movements." (*Auk*, xxvi., 137.)
- (5) — (1910).—"The Tagging of Wild Birds: Report of Progress in 1909." (*Auk*, xxvii., 154.)
- (6) DOUGLAS, S. R. (1917).—"An Experimental Investigation of the Migration of Woodcock breeding in the West of Ireland." (*Proc. Zool. Soc. London*, 1917, 159.)
- (7) HAMILTON, John (1908).—(*Field*, 1908, 717 & 745.)
- (8) HERMAN, Otto, and SCHENK, Jakob (1909 *et seq.*).—(*Aquila*, 1909, 34): and subsequent periodical reports.

- (9) MORTENSEN, H. Chr. C. (1907).—"Ringfugle." (*Dansk Ornith. Forenings Tidsskrift*, i., 144.)
- (10) — (1909).—"Teal in Winter." (*Vidensk. Medd. fra den Naturhist. Forening i København*, 1908, 127.)
- (11) — (1911).—"Meddelelse om Nogle Ringfugle." (*Dansk Ornith. Forenings Tidsskrift*, v., 115.)
- (12) — (1912).—"Fra Fuglemærkestationen i Viborg." (*Dansk Ornith. Forenings Tidsskrift*, vi., 98.)
- (13) — (1920).—"Mærkede Storke." (*Dansk Ornith. Forenings Tidsskrift*, xiv., 91.)
- (14) PERCY, Lord William (1909).—(*Country Life*, 1909, 323.)
- (15) SCHENK, Jakob (1910).—"Das Experiment in der Vogelzugsforschung." (*Bericht über den V. Internationalen Ornithologen-Kongress*, 175): and see HERMAN.
- (16) THIENEMANN, J. (1904 *et seq.*).—"Jahresberichte der Vogelwarte Rossitten." (Published annually in *Journal für Ornithologie*.)
- (17) — (1910).—"Der Zug des Weissen Storchs." (*Zool. Jahrb., Suppl.* xii., 665.)
- (18) THOMSON, A. Landsborough (1909).—"The Possibilities of Bird-Marking." (*Proc. Roy. Phys. Soc. Edin.*, xviii., 204.)
- (19) — (1912).—"Aberdeen University Bird-Migration Inquiry: First Interim Report (1909-12)." (*Scot. Nat.*, 1912, 144, and 1913, 29.)
- (20) — (1915).—"Aberdeen University Bird-Migration Inquiry: Second Interim Report (1912-14)." (*Scot. Nat.*, 1915, 313.)
- (21) TICEHURST, Claud B. (1908).—(*British Birds Mag.*, ii., 35.)
- (22) TOMLINSON, Richard (*per* J. A. HARVIE-BROWN) (1907).—(*Annals Scot. Nat. Hist.*, 1907, 114.)
- (23) VAN OORT, E. D. (1911 *et seq.*).—"Bird Marking in the Netherlands." (*Notes from the Leyden Museum*, xxxiv., 55): and subsequent periodical reports.
- (24) WEIGOLD, Hugo (1910).—"Die Vogelwarte Helgoland einst und jetzt und die Methoden der Vogelzugsforschung." (*Bericht über den V. Internationalen Ornithologen-Kongress*, 563.)
- (25) — (1910 *et seq.*).—"Jahresberichte über den Vogelzug auf Helgoland." (Published annually in *Journal für Ornithologie*.)
- (26) WITHERBY, H. F. (1909 *et seq.*).—(*British Birds Mag.*, iii. *et seq.*, *passim.*)

XXVII.—*Some Thoughts on Subspecies and Evolution.*

By Colonel R. MEINERTZHAGEN, D.S.O., M.B.O.U.

IN 'The Ibis' of this year, p. 345, appeared a letter over the signatures of Dr. Lowe and Mr. Mackworth-Praed, in answer to a letter of Mr. Loomis in 'The Ibis' of 1920, p. 965.

These letters bring out several points of great importance to those of us interested in evolution, distribution, and migration. These points can be enumerated as follows:—

1. Is intergradation necessary among forms in order to determine their status as species or as geographical races?
2. Is a geographical race due to one cause only—environment,—or can it be due to mutation? If the latter is the case, should they not be species?
3. Are geographical races incipient species, and can geographical races, whose differences are obviously due to environment, ever develop into a species?
4. Of what value is the subspecies?
5. Definition of a subspecies.

1. *Intergradation.*

Many eminent ornithologists have accepted the fact that absence of intergradation among birds results in a definite entity, the existing species, which must remain the only "definite minor unit in nature." This is probably correct and covers the vast majority of geographical races, but not all. Insular races, which are obviously but variations due to isolation, having no intermediate terrain with their parent stock, can naturally have no intermediate or inter-graduating races. The same argument applies to variations occurring among isolated continental communities, when the intervening country is unsuited to the life of the species. In these cases isolation is as complete as insular isolation, and the intervening range of hills, desert, or other obstacle

has no intermediate form, as suitable intermediate terrain does not exist.

It also seems that distance in isolation is of no consequence in permitting the union of two obvious geographical races under one species. We must all admit interrupted distribution, and who is going to define the limit of such interruption? A large number of New World and Old World forms have been united as geographical races of one species, even when no intermediate forms either do or can occur. If, then, we admit an interruption of 3000 miles, why not admit an interruption of 6000 miles or even greater distances?

If we were to accept the view that intermediate forms are essential for a true geographical race, we could not concede that a trinomial could be used except for purely environmental differences among contiguous races: neither could we allow that any isolated geographical race, showing purely environmental differences, is entitled to trinomial nomenclature.

It therefore appears that intermediate forms cannot be made an essential factor in determining a true geographical race, and that interrupted distribution, however extended, should not be a factor in rejecting an obvious geographical race.

2. *Causes of geographical variation.*

Lowe and Praed, whilst admitting that most geographical races are due to environment, consider that in some cases they are due to mutation. They challenge the whole Darwinian theory, and all principles of gradual evolution. They are not advocates of the "little by little" theory.

Let us examine Darwin's theory. It is ably summarised by Professor Punnett in his book on Mendelism. Darwin's theory briefly was:—

In any species of plant or animal the reproductive capacity tends to outrun the available food supply, and the resulting competition leads to an inevitable struggle for existence. Of all the individuals born, only a

portion, and that a very small one, can survive to produce offspring. The nature of the surviving portion is not determined by chance alone. No two individuals of a species are exactly alike, and among the variations which occur some enable their possessors to cope more successfully with the competitive conditions under which they exist. In comparison with their less favoured brethren they have a better chance of surviving and consequently of leaving offspring. Offspring tend to resemble their parents more than other members of the species, and favourable variations are transmitted.

In opposition to the Darwinian Theory is the Mutational Theory, which believes that new varieties suddenly arise from older ones by sharp sudden steps or mutations, and not by any process involving the gradual accumulation of minute differences. Such mutations turn up suddenly complete in themselves and are therefore "sports," their origin or meaning being unknown. Where such differences are due to a change in the gamete, they are heritable, are termed mutations, and are good species. Where such variations are not heritable, they are termed fluctuations and can never become permanent. Hybrids are, of course, mongrels, and no amount of selection, artificial or natural, can fix them as species.

Mutation is therefore regarded as the basis of all evolution, though it is conceded that the continued existence of a mutation is subject to natural selection.

Such is the theory based on Mendel's experiments and on the work of his many later disciples.

An examination of the experiments on which the Mendelian theories are based shows that they have been almost exclusively undertaken on plants and domesticated animals and under artificial conditions. In fact, they could not have been undertaken in any other medium. I believe that selection by man, and the perpetuation of sports or mutations as permanent varieties, whose differences are heritable, is a state which occurs but rarely in nature, and most of the deductions

from such experiments are of little value in studying evolution in its natural state. They are, of course, of immense value to the economist or poultry-fancier, but the artificial perpetuation of freaks is surely not a state of which Nature approves.

Natural selection works at the gradual improvement of life, and the elimination of what is not good, but has to work on certain definite material. Though I realise that every branch of life has great possibilities, there are equally very definite limitations. For instance, the struggle for existence precludes the various branches of life living as equals, certain groups always seeking leadership. When such accidents as mutational freaks occur, they spring into the world on their own responsibility, and are variations springing from within, being entirely divorced from environment. If the change is beneficial or harmless, they are allowed to remain and reproduce their freakish variation; if the change is harmful or a handicap, they die. When man, however, artificially perpetuates harmful freaks, he does so in spite of natural selection. So soon as man withdraws artificial protection and selection, the freak, thrown on the mercy of natural selection, must revert or perish. Such is the law for which we have to be thankful.

Moreover, it seems that nearly all artificially-produced races, when removed from artificial conditions, do not retain those variations which artificial selection has given them. The feral goats which I have seen in Ireland, Scotland, and on Round Island in the southern Indian Ocean, the feral Pigeon of Mauritius, and the Goldfish which after introduction to Madagascar devoured the only edible freshwater fish in the island, have all tended to revert respectively to wild Goat, wild Rock-Pigeon, and the ungainly mud-coloured ancestral stock of the Goldfish.

This leads me to assume that artificial selection does not (as Mendelians maintain) alter the gamete, unless artificial conditions and selection are maintained for a sufficiently long period to permit cumulative effect. But mutational variation under natural conditions remains constant, because natural conditions do not appreciably vary. But I admit that the

only cases of mutational variation which I can call to mind in nature are dimorphic forms, and it is by no means proved that such are mutational.

The mutationist will argue that whenever a domesticated variety resumes a wild life, the original wild stock being dominant to the recessive domesticated variety, such variety must revert, and that such a process is in strict accord with Mendel's theory.

But under natural conditions, constant variations, which unaided Nature has produced and which natural selection has perpetuated, do not revert. This still further convinces me that it is dangerous to apply to wild life the results of evolutionary experiments on domestic animals and plants. Both the experiments of Mendel and of more recent investigators have been conducted under conditions which do not exist in wild nature.

I would further mention that there is no artificial mutation which resembles any known variation separating natural species one from the other. Whether we take the domestic pigeon, fowl, or canary, it is remarkable that no single artificial variety has ever, so far as we know, occurred in a wild state.

I would also mention that natural selection, where environment remains unchanged, has no effect on evolution, except in those few cases of dimorphism which may or may not be mutational. But such an exception is pure theory.

I do, however, agree that in some cases natural selection may have allowed dimorphism, which is possibly mutational, to initiate a species. Such cases exist among the genus *Cœnanthe*, in the Jackdaws (*Colœus dauricus* and *neglectus*), in the Skuas, and in many others. It appears that such mutants might establish themselves as good species, which would result in two species, separated by slight superficial differences, inhabiting the same area. Such a state at present exists among the Tree-creepers, Dippers, Rock-Nuthatches, the Whooper (*C. cygnus*) and Bewick's Swan (*C. bewicki*), and others.

But I cannot call to mind any geographical race which

can be ascribed to mutation. I believe they are all due to environment or isolation, both being geographical factors. A mutation has nothing whatever to do with geography.

I have tried to apply the mutation theory to species which contain undoubted geographical races. If I were to ask you to believe that mutation is responsible for geographical variation, I should have to ask you to believe that British races of Continental species all became smaller and darker quite suddenly and quite accidentally; I should have to ask you to accept that Egyptian Delta races all became dark by accident and spontaneously. I should have to ask you to believe that intermediate races in intermediate areas are accidental. You would have to swallow the fact that most pure desert species (*Alamon*, *Ammomanes*, *Pterocles*, *Eremophila*, *Ænanthe deserti*, *Cursorius*, and many others) are of the same sandy hue on their upper parts by accident, and are all descendants of "sports."

Take the Song-Thrush. The British race is darker than the Continental race. The Hebridean race is even darker than the British race. The degree of colour is in close relation to the degree of rainfall in the breeding-quarters of the three races. Is that accident? If so, similar remarkable accidents have occurred under similar conditions in many parts of the world, which would be preposterous to describe as a coincidence.

I shall not even attempt to convince you of such fallacies, as the theme is ridiculous. Evolution does not consist in the perpetuation of a series of defective freaks.

The advocate of mutation may say that such variations have proved of value to the bird, and have been perpetuated whilst other less suitable variations have been rejected by natural selection. But if that were the case, why does the Continental Song-Thrush spend from September to April in the British Isles, if the climate is so unsuited to its characters? And why do a host of other birds from the north spend the autumn, winter, and spring among their more southern representatives, if the area of the latter is so unsuited to the characters of the former?

The breeding-season is the most important period in a bird's life, and it is the environment of the breeding-area which influences variation more than winter-quarters. It is the fact that a bird like the Stonechat, which in various continental and insular forms breeds throughout Europe, Asia, and Africa, and many of whose races co-exist in the same winter-quarters, that induces me to believe that the environment or isolation of the breeding-quarters is in the main responsible for variation, and that this variation is the result of natural selection working on gradual change, and not the result of the perpetuation of some accidental and sudden freak.

I doubt very much whether mutation, or the sudden appearance of "sports," can establish a subspecies, though I believe a species might evolve another species by splitting, originating in mutation but eventually becoming a constant and heritable germinal character.

I also believe that wherever geographical races are connected by intermediate forms, it is absolute proof that the differences are entirely due to environment and not mutation, except where such intermediate forms are hybrids.

As a corollary to this, it follows that environment can affect the gamete; and this seems quite a reasonable assumption, if it is accepted that geographical causes influence the bird at all. Surely it is just as possible for the gamete to gradually change and enable new constant characters to become heritable, as it is for the gamete to suddenly change and embody heritable characters.

The mutationist will say that there is no evidence to show the gamete alters, and that, to perpetuate any environmental variation, the conditions to produce such variation must be repeated in each successive generation. In other words, acquired characters are not heritable.

That may be true for artificially-, accidentally-, or abnormally-acquired characters, but it is not true for environmentally-acquired characters, which are certainly heritable for one generation, but which appear to react to extremes of environment especially when artificially reproduced (*cf.* Beebe's experiment on Doves).

I would here draw attention to a valuable paper on "Inheritance of Acquired Characters" by Professor MacBride in the January number of 'Science Progress.' From experiments conducted by Kammerer on Salamanders and Midwife-Toads, it would appear that acquired characters are indeed heritable.

To sum up, I believe that nearly all evolution is the cumulative effect of environment, which acts with greater force and rapidity on isolated communities than on widely-distributed continental communities.

Weissmann, in his work on the Germ-Plasm, has been severely criticised for inferring that environment can directly influence the germ-cells without affecting the body-tissue in which the germ-cell is contained. This I believe to be partly correct, and I consider environment can affect the gamete to the following extent. If a European pays a visit to a tropical climate, his skin becomes tanned and brown under the influence of the sun's rays. The colour of his skin is naturally not transmitted to his offspring to any degree which is appreciable to the human eye. But if that same European settles in the tropics, the cumulative effect of the sun's rays on countless generations will permanently affect the colour of the skin by a very gradual process, and an eventual dark-skinned race will become established. I do not doubt that the germ-cell changes in exact proportion to the degree of permanence which cumulative environmental effect has on the body-tissue.

3. Are geographical races incipient species?

Where no isolation exists, geographical races will almost invariably be connected by intermediate forms in intermediate areas, and such intermediate areas may be but a mile or so in extent, or they may extend to a hundred miles or so; but such geographical races, when so constructed, can, in our opinion, never become species. It therefore follows that only isolated geographical races are incipient species, but to this end isolation must be complete.

We find many examples of this, the most remarkable being the case of the Chaffinch (*Fringilla cœlebs*). In the Canary Islands, as already pointed out by Bannerman (Ibis, July 1920), we find undoubted geographical races of the Chaffinch living alongside *Fringilla teydea*, and tending to vary in the same direction as a geographical race, as *F. teydea* does as a species. We believe that *F. teydea* was once but a geographical race of *F. cœlebs*, but that isolation has produced a species. The more recent invasions of Chaffinches to the Canary Islands are moving along the same path of evolution as did *F. teydea*, and are undoubtedly incipient species.

Though, therefore, we accept the fact that isolation produces a true species from an original geographical race, such can only occur under conditions of complete isolation. By far the majority of geographical races are not incipient species, and stand little chance of gaining that status so long as they are in actual touch with the parent stock.

I further wish to endorse the old truth that isolation is the strongest factor working for variation, and is the main factor in the evolution, not only of geographical races but of species.

4. *What is the value of a subspecies?*

We are not clear as to what is intended by this question. To him who asks what is the value of trinomial nomenclature, we reply that it has been found the shortest, most convenient and scientific way of referring to geographical variation. Its critics have not yet suggested a better way.

To him who asks of what value to science is the recognition of slight geographical variation, we reply that it helps to solve the problems of migration, evolution, and distribution among birds, and that such value has been recognised by the leading ornithologists of the world.

But there are still a few who regard the trinomial system as a simple and quick way of gaining notoriety, whilst others look on the method as a confusing and unnecessary invention of the Devil.

5. *Definition of a subspecies.*

There can be no hard-and-fast definition for a state of nature which is constantly changing. There exist forms which we all know, whose status is still unsatisfactory, and even Nature herself might have difficulty in defining them as species or subspecies, for the simple reason that they are in the transitional stage between the two.

But it seems correct to describe trinomially as geographical races those birds of similar type inhabiting different geographical areas, and whose differences are abundantly (not exclusively) constant within a given area. In fact, they must be a pure geographical variation, the variation coinciding with distribution.

Intermediate forms will nearly always be found in intermediate areas, but such need not always be the case, as in the instance of a race which has receded from its parent stock into temporary isolation, and which has again expanded towards its parent stock. Such appears to be the case with *Corvus f. frugilegus* and *Corvus f. pastinator*, and perhaps with *Erolia minuta* and *Erolia ruficollis*. Opinion is bound to differ regarding the status of such forms, as the question is a pure matter of opinion and not of fact.

Again, it is frequently stated that two geographical races of the same species must not breed in the same area. We agree that a geographical race is destroyed if another race of the same species continually breeds over a wide area of the former; but where two races of the same bird meet, they naturally, either by mating together or under the influence of intermediate conditions, produce intermediate forms. In fact, where this occurs it is good proof of the two races being good geographical races of the same species.

This short article is not intended to be a treatise on evolution. It has been written in the hopes that it may form the basis of a discussion in which we may have the opportunity to take part at some future meeting of the British Ornithologists' Club. To the highly-trained scientific mind, many of my contentions are no doubt ridiculous and untenable. It is the truth we seek, and if from the fallacies in my arguments others can point to more truthful causes of evolution, my time will not have been wasted.

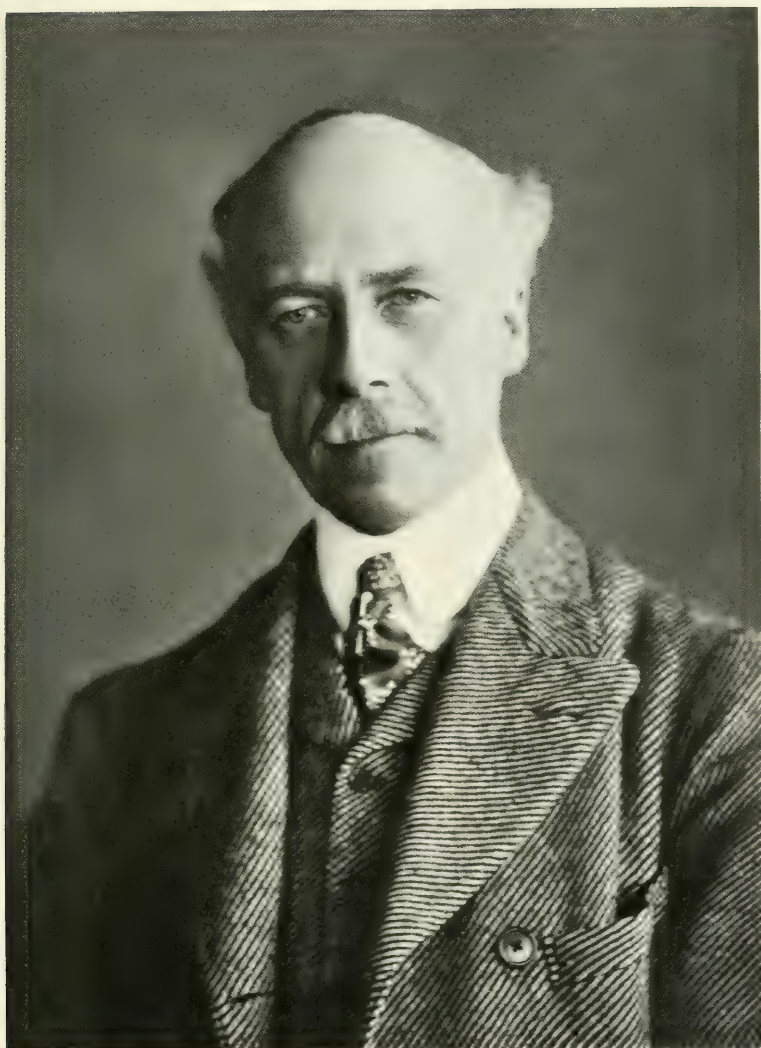
XXVIII.—Obituary.

ROBERT GEORGE WARDLAW-RAMSAY. (Pl. VI.)

By the death of Colonel Wardlaw-Ramsay the British Ornithologists' Union has lost an old and highly esteemed member—one who filled the office of President from 1913 to 1918. Colonel Wardlaw-Ramsay was in his 70th year, and had been seriously ill for about a month when he passed away on the 25th of April.

He was the only son of Robert Balfour Wardlaw-Ramsay of Whitehill in Midlothian and Tillicoultry in Clackmannanshire, and his mother was Lady Louisa Hay, a daughter of the Marquis of Tweeddale. He elected to follow a military career, and in November 1872, soon after obtaining his commission, left for India to join the Highland Light Infantry; went through the Afghan campaign as an officer of the Hampshire Regiment; and eventually was Lieut.-Colonel of the 7th Royal Scots. After quitting active service he became Lieut.-Colonel of the Volunteer Battalion of the last-named Regiment, afterwards acted as Lieut.-Colonel of its Territorial Force Reserve; and did much useful service during the late war. The later years of his life were passed at Whitehill, and were devoted to county affairs, in which he took an active part. He was Chairman of the Edinburgh and East of Scotland College of Agriculture, and besides closely associated with charitable work. Though by nature reserved in manner, he was a singularly attractive personality to those who knew him intimately, was a man who lived up to high ideals, and was the personification of all that was honourable and best. He married a daughter of Mr. Charles Swinton Hogg, by whom, as well as three sons and two daughters, he is survived.

Wardlaw-Ramsay was elected a member of the British Ornithologists' Union in 1872. From his boyhood he had always been keenly interested in birds, and commenced to contribute to ornithological literature in 1874, as will be seen from the list of his various papers (so far as



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they are known to the writer) which concludes this notice. On the death of his uncle the Marquis of Tweeddale, who was for many years the distinguished President of the Zoological Society, Wardlaw-Ramsay inherited the vast collection of birds formed by that nobleman. This the inheritor generously presented to the British Museum (Natural History), on condition that a set of duplicate specimens was to be sent to the Edinburgh Museum. He also handed over the very valuable ornithological library, which came to him with the collections, to the Museum, on condition it was placed in the bird-room for the use of the officers and students working there. It is now known as the Tweeddale library. In 1881 he edited and revised a memorial volume entitled 'The Ornithological Works of Arthur 9th Marquis of Tweeddale,' a quarto of 760 pages. For several years past Colonel Wardlaw-Ramsay had been engaged upon the preparation of a concise handy volume—an ornithological Baedeker—on the species and races of the Birds of Europe and northern Africa for the use of travellers and others. Though this book was nearing completion, yet a considerable amount of work remained to be done ere it was ready for the press, and shortly before he passed away he requested that the manuscript should be handed unconditionally to the writer of this notice, who hopes to arrange for its completion and publication in due course.

List of Papers.

Description of a new species of Woodpecker (*Gecinus erythropygus*) from British Burmah. Proc. Zool. Soc. 1874, pp. 212-213.

Ornithological Notes from the district of Karen-nee, Burmah. Ibis, 1875, pp. 348-353.

On an undescribed species of Nuthatch (*Sitta magna*) and another bird (*Orocetes erythrogaster*) from Karen-nee. Proc. Zool. Soc. 1876, p. 677.

Notes on some Burmese Birds. Ibis, 1877, pp. 452-473.

A. Synopsis of the genus *Pomatorhinus*. Ibis, 1878, pp. 129-145.

Description of a new Oriole from Borneo (*Oriolus consobrinus*). Proc. Zool. Soc. 1879, p. 709.

- Ornithological Notes from Afghanistan (Nos. I. & II.). Ibis, 1879, pp. 444-449; 1880, pp. 45-71.
- Contributions to the Ornithology of Sumatra.—Report on a collection from the neighbourhood of Padang. Proc. Zool. Soc. 1880, pp. 13-16.
- Descriptions of Two New Species of Birds (*Analcipus consanguineus* and *Edoliosoma alterum*). Ibis, 1881, pp. 32-34.
- Descriptions of Two New Species of Birds from Sumatra (*Hemixus sumatranus* and *Criniger sumatranus*). Ann. Mag. Nat. Hist. x. 1882, p. 431.
- Catalogue of the Tweeddale collections. Ibis, 1884, p. 123.
- Contributions to the Ornithology of the Philippine Islands:—No. 1. On two collections of Birds from the vicinity of Manila. Ibis, 1884, p. 330.—No. 2. On additional collections of Birds. Ibis, 1886, p. 15.
- On the Columbine genus *Macropygia* and its allies. Ibis, 1890, p. 214.
- On a New Genus of the Order Columbæ. Ibis, 1890, p. 246.

WILLIAM EAGLE CLARKE.

HENRY MORRIS UPCHER.

Henry Morris Upcher, born December 1839, who passed away on April 6, 1921, at his picturesque seat at Sherringham, aged 82, was perhaps better known as an all-round sportsman and shooter of game than as a naturalist. Nevertheless, his predilection for wild animals, which began before he went to Cambridge, was early, and enthusiastic. The eldest of six brothers, only two of whom have survived him, in 1869 Mr. Upcher married Maria, only daughter of Canon Sparke of Feltwell, by whom he had two sons and two daughters. In 1892 he settled at Sherringham, where he contributed largely to the rise and progress of that popular resort by the sea.

An active supporter of all things connected with the county of Norfolk, Mr. Upcher was seldom idle. He was High Sheriff in 1899, D.L. and J.P., was elected to the County Council as alderman in 1901, and served on the committees for the Protection of Wild Birds and Eastern Sea Fisheries, besides assisting the Sea-Coast Erosion Commissioners and working for the Urban Council. Needless

to say, he was a supporter of the Norfolk and Norwich Naturalists' Society, although not an original member, and in 1883-4 was offered and accepted the post of President. When he joined in 1871, this Society was poorly supported and little known, but he lived to see it rise in popularity under the secretaryship of Dr. S. H. Long, and contributed on at least one occasion to its Transactions.

A Fellow of the Zoological Society in 1864, and Member of the British Ornithologists' Union the same year, he was easily senior in both these scientific bodies to any other East Anglian. Of course, he made a point of attending the meetings of the B. O. U. whenever possible, and at the special Jubilee gathering, held in 1908, he was called upon as the oldest surviving elected member to take the chair, when he had the honour of presenting medals to the surviving original members of the Union—Mr. F. D. Godman, Dr. P. L. Selater, Mr. W. H. Hudleston, and Mr. Percy Godman. The speech with which these presentations were prefaced was a characteristic one, bringing in a reference to Canon Tristram, his fellow-traveller in Palestine, and another to his old college friend Alfred Newton.

Like other naturalists, he took great interest in the visitation of Pallas's Sand-Grouse to this country in 1888, and exhorted his friends to refrain from shooting them. But besides exerting himself in this way he assisted the late Mr. Southwell and the writer of these recollections in compiling a correct list of occurrences—no easy task, for they numbered over eleven hundred for the county of Norfolk alone, besides many more in Suffolk. Unfortunately there was no proof of breeding, although various reports were circulated as to the finding of eggs (see '*Zoologist*,' 1888, p. 454), but only in one instance could it be verified.

A farmer at Pickenham near Swaffham, who ought to have known better, shot a Sand-Grouse as she rose from her three eggs. These he took to Major Appledwaite of that place, from whom and from the late Mr. Partridge this information was obtained. Mr. Southwell enquired into

the affair, and satisfied himself that the record was reliable, but neither he nor Mr. Upcher saw the eggs, which were subsequently broken.

From a sportsman's point of view, Upcher knew everything about game-birds that there was to be known, his special favourite being the Woodcock, of which he had possibly brought down as many to his own gun as any man in England. His home on the coast was, in fact, a point of arrival for Woodcocks, Fieldfares, Redwings, and thousands of other migratory birds which cross the North Sea in October and November. This annual passage takes place by night, when the bulk of the migrants pass, those seen by day being for the most part laggards delayed by contrary winds. An exception must, however, be made for the Corvidæ, which appear to travel at any time, nearly as many passing by day as by night.

The Sherringham game-books have records of the number of Woodcocks for many years, and the following list, extracted from them, which was copied for the present writer by Mr. Upcher himself, may here be given as a specimen of the sport which well-preserved coverts can afford :—

In 1858,	102	were shot (36 on one day).
„ 1859,	68	„
„ 1866,	72	„
„ 1868,	101	„
„ 1869,	87	„ (35 in one day).
„ 1880,	111	„
„ 1883,	112	„
„ 1884,	108	„
„ 1885,	119	„

These figures are interesting when compared with returns made from other parts of Norfolk and Suffolk.

More than once pied varieties came under Mr. Upcher's notice, and in 1868 a melanism was shot near Sherringham, which is now in the Natural History Museum.

Mr. Upcher's name is commemorated in *Hypolais upcheri*,

named by Tristram after his travelling companion, and obtained during their journey in Palestine; he was also the original discoverer of *Passer moabiticus*, which was only met with by the party on the eastern side of the Dead Sea, and is still a scarce bird in collections.

J. H. GURNEY.

JOHN BURROUGHS.

John Burroughs, who died 29 March last, within a few days of his eighty-fourth birthday, was to America what Gilbert White was to England. In natural history and in literature Burroughs covered a wider field than White, but both aroused in their readers an interest in the everyday life of garden, field, and forest about their homes.

'Wake Robin,' Burroughs' first book, was published about 1870, and his final work 'Accepting the Universe' appeared in the last year of his life. In 1871 he made a short visit to England, and the results of his observations here are recorded in 'Winter Sunshine' under the heading "An October Abroad." Some years later he made a longer stay in this country and devoted a volume, 'Fresh Fields,' to describing his impressions of England and its bird-life.

Although in no sense a technical naturalist, Burroughs was a careful and accurate observer, and his facility of expression gave to his essays a literary quality which won for him a much larger audience than is reached by the purely scientific writer. For this reason he exerted a profound influence in developing in America that interest in nature, and particularly birds, which has been so potent a factor in securing the passage and enforcement of laws protecting wild life in that country.

Mr. Burroughs was the leader in the movement against what, in America, is called "nature faking," and, joined by Mr. Roosevelt, he succeeded in bringing into disrepute that class of writers who, sacrificing truth for gain, presented fiction as fact and attributed to animals an intelligence they are far from possessing.

Mr. Burroughs won disciples not only by the power of

his pen, but by his lovable personality, which gained for him thousands of friends. His home "Riverby" on the Hudson River, with its cabin-study "Slabsides" in the adjoining hills, and his summer retreat "Woodchuck Lodge," at his birthplace in the Catskills, were yearly visited by hundreds of his followers. It is gratifying to learn that within a month of his death a Memorial Association was organized and incorporated to acquire these places which are so closely associated with Burroughs' life and works, and to preserve them as shrines for those who, in succeeding years, will know John Burroughs only through the written words which form his legacy to the world.

XXIX.—*Notices of recent Ornithological Publications.*

Bangs and Penard on American Birds.

[Notes on some American Birds, chiefly Neotropical. By Outram Bangs and Thomas E. Penard. Bull. Mus. Comp. Zoöl. Cambridge, Mass. lxiv. 1921, pp. 365-397.]

An important systematic paper in which two new genera, one new species, and five new races are proposed, while a number of species and subspecies are reviewed, involving changes and corrections in nomenclature and synonymy.

The new genera are *Cometornis* (perilously near *Cosmetornis* in our opinion) to take the place of *Lophotriccus*, with type *Todirostrum squamacrista* Lafres., and *Muscifur* near *Myiarchus* for type *M. semirufus* Scl. & Salv. The new species is *Cometornis vitiosus* from Peru, based on an old Lafresnaye specimen dating from early in the last century!

Beebe on the Pheasants.

[A Monograph of the Pheasants. By William Beebe. Vol. ii. pp. xv+269; 24 col. pls., 24 photogr., 5 maps. London (Witherby for the New York Zoological Society), 1921. 4to.]

The long-expected second volume of Mr. Beebe's great

and sumptuous work on the Pheasants has at last appeared, and fully bears out the expectations formed by the first. We understand the publication of the other two volumes, which will complete the work, will not be long delayed.

The present volume deals with the Kaleege and Silver Pheasants of the genus *Gennæus*, the Malayan Firebacks of the genera *Acomus* and *Lophura*, the remarkable White-tailed Wattled Pheasant of the genus *Lobiophasis*, and the Jungle-Fowls, four in number, of the genus *Gallus*.

Perhaps the most valuable and remarkable feature of this work are the personal observations of Mr. Beebe himself, which are chiefly included under the heading of "The Bird and its Haunts." The success which Mr. Beebe had (during the comparatively short time in which he was travelling in the east) of observing in their native jungles so many species, is extraordinary. Of the nine species of *Gennæus* he has personal experience of five; he saw four out of the five species of Firebacks as well as the *Lobiophasis*, and three out of the four Jungle-Fowls.

In his taxonomy, Mr. Beebe is distinctly conservative and a lumpers. He reduces the number of species of *Gennæus* to nine—a great reduction from sixteen of the Hand-list and Mr. Baker's estimate of eight species and eight subspecies. Mr. Beebe believes that the great number of the species described chiefly by Oates from Burma, and often founded on single specimens, are natural hybrids which occur at the junction of the ranges of *G. lineatus* with the more western *G. horsfieldi* and the more eastern *G. nycthemerus*, and he has devoted a good deal of argument to endeavouring to prove this thesis. We shall not attempt here to give an opinion on this question, but in any further attempt at revision Mr. Beebe's views must have great weight.

The coloured plates, of which there are forty-four, are, with the exception of five, reproduced from paintings by Mr. George Lodge. Mr. C. R. Knight, the American bird-artist, is responsible for the Silver (*Gennæus nycthemerus*) and the Fireback (*Lophura ignita*); while Mr. Grönvold contributes three, illustrating chicks and plumages. Our

chief criticism of the plates is that there is too much scenery and too little bird in a good many of the cases, but we cannot forebear our admiration of them as a whole. The photogravures from Mr. Beebe's own photographs give one a wonderful idea of the country which the various species inhabit, and the maps are of the greatest value to illustrate the range. We congratulate Mr. Beebe, his artists, and publishers on their joint achievement.

Boubier on Migration Routes.

[Les cinq éventails de migration des oiseaux de la faune paléarctique. Par Maurice Boubier. Bull. Soc. Zool. Genève, ii. pp. 216-228, map, 1919.]

M. Boubier, after examining all the facts available, has conceived the idea that the migration routes of the birds of the Palearctic Region are best represented by fan-like or radiating lines, open towards the north, fan-like towards the south. These five fans are, briefly :

1. European-Senegambian. Birds breeding from western Siberia to Greenland, passing south along western Europe to western Africa.

2. Caucasio-Zambesian. Birds breeding in south-eastern Europe and western Asia pass through Egypt and along the Red Sea to eastern Africa as far as Natal.

3. Aralo-Malabaric. Birds of eastern Russia and central Asia pass through Beluchistan to the western coasts of India.

4. Himalayan-Hindu. Birds nesting in the Himalaya winter in the Indian plains.

5. Sibero-Malayan. Birds nesting in eastern Siberia and Kamchatka, passing south to eastern India and the Indo-Malayan countries.

The fans are shown depicted on a sketch-map, and worked out with examples ; the idea is somewhat novel, and this method of representing migration routes is probably much more in accordance with the facts than

the more detailed arrangement of route-lines such as were first proposed by the late Prof. Palmen.

Chapman on South-American Birds.

[Descriptions of apparently new Birds from Bolivia, Brazil, and Venezuela. By Frank M. Chapman. American Museum Novitates, No. 2, 1921, pp. 1-8.]

Eight new forms are described. Of these, four are new species as follows:—*Capito brunneipectus*, *Nonnula amaurocephala*, and *Microrhopias emiliae* from Brazil, belonging to the Museum Goeldi at Para, and *Rhopochares cochabambæ* from Bolivia, collected by Miller and Boyle for the American Museum.

The periodical in which these appear is a new one and is stated to be "issued as occasion requires for the publication of preliminary announcements etc. The articles are to be numbered serially and paged independently."

Courtois on the Birds of China.

[Les Oiseaux du Musée de Zi-ka-wei. Mém. concernant l'Histoire Naturelle de l'Empire Chinois par des Pères de la Compagnie de Jésus. Vol. v. cahier 3, fasc. 1-4, pp. 1-121, pls. 1-45, 1912-1918.]

There has recently reached us from China a memoir on the birds of the Zikawei Museum, near Shanghai, in four quarto parts. Though nowhere stated in so many words, the letterpress and the plates appear to be the work of the Rev. R. L. Courtois, S.J., the Director of the Museum and a member of our Union.

The Museum of Zikawei was founded by the late Père Heude, who travelled extensively in China and Malayan countries. In the present publication is a list of the birds in the collection, arranged according to Oustalet and David's work on the birds of China, with Latin and Chinese names, localities, and remarks on the nests and eggs when in the collection. The first fascicule contains a list of 318 species in the collection, the second a series of 13 plates of nests and eggs of Chinese birds, the latter

reproduced by direct photography and coloured by hand. The third and fourth fascicules contain supplementary lists of birds in the Museum collection, and photographs of selected mounted specimens, also coloured by hand. The whole work is a monument to the industry of our fellow-member, and will be undoubtedly of great value to all students of Chinese birds.

Griscom and Nichols on the Seaside Sparrows.

[A Revision of the Seaside Sparrows. By Ludlow Griscom and J. T. Nichols. Abstr. Proc. Linn. Soc. New York, no. 32, 1920, pp. 18-30.]

The Seaside Sparrows are a rather unobtrusive little group of Fringillidæ included in the genus *Passerherbulus*, and confined, as their name implies, to the salt-marshes along the Atlantic and Gulf coasts of the United States.

The authors had the advantage of examining nearly 700 specimens, and it took them two months to arrive at their final conclusions. They recognize three species, one of which, *P. mirabilis*, can be divided into seven local races. Two of these are new and described here: *P. m. juncicola* from north-west Florida, collected by the senior author, which originally set him on the task of rearrangement, and *P. m. howelli* from Alabama.

Gurney on Norfolk Ornithologists.

[Presidential Address to the Members of the Norfolk and Norwich Naturalists' Society at their 51st Annual Meeting. By J. H. Gurney, Trans. Norfolk and Norwich Nat. Soc. vol. xi. 1919-20, pp. 1-22.]

In his address to the Norfolk Naturalists' Society, Mr. Gurney, who has occupied the Presidential Chair for four years, chose as his subject the lives and labours of several of the more eminent ornithologists of East Anglia, among whom the best known were: Henry Stevenson, author of 'The Birds of Norfolk,' who died in 1888; Alfred Newton; Thomas Southwell, who completed Stevenson's work after his death; Edward Clough Newton, the falconer; and, finally, Mr. Gurney's own father, John

Henry Gurney, sen., whose work on the Accipitres is known to us all.

Gurney on the Annals of Ornithology.

[Early Annals of Ornithology. By J. H. Gurney, F.Z.S. With illustrations from Photographs and old Prints. Pp. 8+240. London (Witherby), 1921. 8vo.]

We desire to heartily congratulate Mr. Gurney on the completion of his long-expected 'Annals of Ornithology.' We can imagine that the compilation of the work has been a labour of love to its author, and it certainly has provided a rich storehouse of ornithological lore to the reader. "To collect all the ancient passages about birds, of any special interest, but more particularly those which concerned British Birds, and to string them together in order of date" was the author's scheme as set out in the preface, and although the outcome of this endeavour has resulted in a somewhat disjointed account of the various species, owing no doubt to the interpolation of fresh matter after the first proofs were set up, the general interest of the work is by no means diminished thereby. The 'Annals' embrace a period ranging from prehistoric times till the close of the eighteenth century, and include a very full collection of extracts from the various rare and ancient books which deal with matters ornithological in these islands, though we notice that the passages in Fynes Morrison's "Itinerary" (1617) referring to the "Foules" of England and Ireland* are omitted, and we should have

* The latter runs as follows:—"Ireland hath great plenty of Birds and Foules, but by reason of their naturall sloth, they had little delight or skill in Birding or Fowling. But Ireland hath neither singing Nightingall, nor chattering Pye, nor undermining Moule, nor blacke crow, but onely Crowes of mingled colour, such as we call Royston Crowes. They have such plenty of Pheasants, as I have known sixtie served at one feast, and abound much more with Rayles; but partridges are somewhat rare. There be very many Eagles: and great plenty of Hares, Conies, Hawkes, called Gosse-Hawkes, much esteemed with us. . . . The Hawkes of Ireland called Goss-Hawkes are (as I said) much esteemed in England, and they are sort out by myn and all means to be transported thither."

welcomed an extension of the references to the Great Auk (*Alca impennis*), concerning which bird a vast fund of unpublished information is to be found in the late Professor Newton's MS. "Garefowl Book" in the Newton Library at Cambridge.

In addition to the copious extracts furnished from printed works, Mr. Gurney has gathered a valuable fund of information from unpublished Household Accounts and kindred sources, and in particular he is able, in his ninth chapter, to make important additions to that portion of the "Le Strange Household Accounts" first published in 1834 by Mr. D. Gurney in vol. xxv. of 'Archæologia.' These constitute a valuable and interesting description of the various birds and other articles of food used in the domestic economy of a Norfolk country house in the sixteenth century.

In conclusion, we must confess that we have seldom read a more fascinating volume, or one that carries back the imagination more vividly to the "good old days"; and as we turn over the pages we can readily visualise what excitement must have reigned at Hunstanton Hall when the first bird—albeit merely a "Watter hen"—was "killed wt the gun" on that autumn day in 1533, and wish we could have witnessed the great spectacle at Kenilworth* some forty years later, when among other pleasing devices a bridge was prepared for Queen Elizabeth to pass over, where "upon the first payr of posts were set too cumly square wyre cages, each a three feet long, too foot wide: and by in them live bitters, curluz, shoovelarz, hearsheawz, godwitz, and such like dainty byrds, of the presents of Sylvanus the god of Food."—W. H. M.

Hankin on Soaring Flight.

[The Problem of Soaring Flight. By E. H. Hankin. With an introduction by F. Handley Page, C.B.E. Proc. Cambridge Philos. Soc. xx. 1921, pp. 219-227.]

Dr. Hankin, the Chemical Examiner to the Government

* P. 181, 'Annals.'

of India, has been occupying his leisure for many years in investigating the problem of flight, not only in birds, but also in flying fishes and insects and even pterodactyls! He published in 1914 a volume on the subject, which we fear has not attracted the attention it should have; for his work is of a most interesting nature, and he has devised a number of exceedingly ingenious instruments and mathematical methods for recording the speed of flight.

The present short paper deals with the problem of soaring flight. How does a bird whose body is heavier than the air maintain itself at great elevations without perceptible movement of its wings and in a calm atmosphere?

In the present paper Dr. Haukin gives a summary of his observations during the last ten years, and the conclusion he reaches is that "soaring flight is inexplicable in the light of existing knowledge." He believes that in some way or other the energy involved is derived from the sun's rays, and he hopes that a solution may eventually be discovered by experimental investigation. The introduction by Mr. Haudley Page deals with the bearing of soaring flight on mechanical aviation.

Hartert on the Palearctic Birds.

[Die Vögel der paläarktischen Fauna. Von Dr. Ernst Hartert. Bd. ii. Heft xi.-xii. pp. 1345-1600; Heft xiii.-xiv. pp. i-xxiv & 1601-1764; Bd. iii. Heft xv. pp. 1765-1892. Berlin (Friedländer), 1920-1921. 8vo.]

The numbers of Dr. Hartert's invaluable work are coming out more quickly now, and we have before us two double parts, completing the second volume, and the first part of the third volume, containing more matter than we can well deal with in a short article.

In parts xi.-xii. the balance of the Ducks, the Steganopodes, Tubinares, Pygopodes, Columbæ, Pterocletes, and a portion of the Limicolæ are dealt with. Parts xiii.-xiv. contain the rest of the Waders and the Gulls (Lari).

Part xv. is occupied with the Alcæ, the Alectorides (with families Otidæ, Gruidæ, and Rallidæ), the Hemipodii or Turnices, and the Galli. This leaves only the rest of the Galli and the Ostrich to finish, but we understand a formidable supplement and indexes are to follow to complete the work and bring it up to date.

We have found a few points which appear to require comment. The type of *Podiceps* is stated to be *P. fluviatilis*. This must surely be a slip of the pen for *P. cristatus*; moreover, the Little Grebe is called *P. ruficollis* in the main text and not *P. fluviatilis*. We note also that the genus *Morus* is admitted for the Solan Goose. Although the generic name of the Cranes is rightly given as *Megalornis*, the family itself is named Gruidæ; surely according to nomenclatural rules the family name should be taken from the earliest-described genus within its limits. Anyhow, as *Grus* has been shown to be a synonym of *Psophia*, it seems illogical to use the term Gruidæ as a family name.

It will be, perhaps, useful to mention the new forms described in the three parts now under notice. They are as follows:—*Podiceps ruficollis japonicus*, p. 1455; *Ænopenelia tranquebarica murmensis* from the Himalayas, p. 1499; *Cursorius gallicus exul* from the Cape Verde Islands, p. 1526; *Sterna maxima albididorsalis* from west African coasts, p. 1698; *Gallinula chloropus seychellarum*, p. 1843; and *Lagopus mutus pyrenaicus*, p. 1869.

With regard to the Seychelle Moorhen, a race from the island of St. Denys to the north of the main group of the Seychelles appears to have been named by the late Prof. Newton (Dict. Bds. p. 590, footnote) *Gallinula dionysiana*, though the description is not very adequate and the diagnostic character relied on is the extreme reduction of the size of the wings. This does not appear to be the case with the bird described by Dr. Hartert, but comparison of the two forms would be of interest.

Hartert on the Types at Tring.

[Types of Birds in the Tring Museum. By Ernest Hartert, Ph.D. B. Types in the general collection. Nov. Zool. xxvi. pp. 123-178, 1919, and xxvii. pp. 425-505, 1920.]

Dr. Hartert has already rendered a great service to ornithology by his Catalogue of the types in the Brehm collection, chiefly of Palearctic forms (Nov. Zool. 1918, pp. 4-63). He has now in the papers before us commenced to list those in the general collection, and although he has enumerated 878 he has not completed the Passeres.

This is a striking testimony to the value and completeness of the collections in the Tring Museum gathered together in so comparatively short a space of time by the enthusiasm of Lord Rothschild and Dr. Hartert.

The majority of the birds described from the Tring collections are naturally those named by Lord Rothschild and Dr. Hartert themselves, though a good many have been described by Drs. Hellmayr, Neumann, and Stresemann and others who have worked at Tring.

There are also a number of types which have been acquired with collections which had already been described elsewhere. The names which are now regarded as synonyms are marked with a dagger (†), and appear to be very few compared with those that are considered valid; while there are quite a number of new subspecies and names mentioned for the first time, which must be carefully noted by the working ornithologist.

Kuroda on new Japanese and Formosan birds.

[Descriptions of three new forms of birds from Japan and Formosa. By Nagamichi Kuroda. Dobuts. Zasshi, xxxii. pp. 243-248, 1920.]

The birds described are *Milvus lineatus formosanus* from Formosa, distinguished from the mainland form by its smaller dimensions; *Nyroca ferina ferinoides* from Japan in winter, probably breeding in south-eastern Siberia. It differs from the Common Pochard by its shorter wing, which measures 203-210 mm. as against 213-224 mm.

The iris is noticed as bright red, whereas in the Common Pochard it appears to be yellowish to orange. The third new bird is *Campephaga lugubris asakurai* from Formosa.

Mathews and Iredale's Manual of Australian Birds.

[A Manual of the Birds of Australia. By Gregory M. Mathews and Tom Iredale, illustrated with coloured and monochrome plates by Lilian Medland. Vol. I. Orders Casuarii to Columbæ. Pp. xxiv+279; 10 col. & 36 monochrome plates. London (Witherby), 1921. 8vo. Price £3 3s. each volume.]

Not content with his larger work on the birds of Australia, of which eight volumes are now complete, the indefatigable Mr. Mathews in collaboration with Mr. Iredale has now planned a new work on the same subject on a somewhat smaller and less ambitious scale, to be completed in four volumes, of which this is the first.

As is now the case with the larger work, the species are treated of as a whole, and the subspecific races are only mentioned under the heading "Distribution and Forms." The other information in regard to breeding habits is concisely stated, and full description of the plumages are given. There are no keys, but the genera and families are fully diagnosed. The classification is somewhat novel and is somewhat on the lines of Sharpe's 'Hand-list,' but the arrangement and names of the orders are altered; while in the present volume the Frigate-bird is raised to the dignity of a special order, and the Gulls, Shore-birds (Charadriiformes), and Tropic Birds are banded together under the order Lari.

The monochrome plates of heads, bills, and feet will undoubtedly be found most useful to explain the generic diagnoses. Our only complaint is that they are not referred to in the text; indeed, they would have proved more useful still if they could have been interpolated in the letterpress on the pages to which they refer. Seven subspecies have been named as new belonging to the genera *Eudypetes*, *Heteroprion*, *Phæbetria*, *Sulita*, *Chlidonias* (= *Hydrochelidon* auct.), and *Pelecanopus*.

The work will undoubtedly prove most useful to Australian as well as to other workers, and we shall reserve our further remarks and criticisms until the other volumes are completed.

Most of the coloured plates represent nestlings and are of great interest; in fact, all the plates are very good and reflect the greatest credit on Miss Medland, the artist who is responsible for them.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. ix. pts. 1 & 2, pp. 1-96, pls. 400-411. London (Witherby), Feb. & Apr. 1921.]

The Fan-tailed Flycatchers are fascinating little birds, with attractive ways and beautiful nests. Among these, Mr. Mathews only leaves one Australian species in the genus *Rhipidura*, though he admits that his *Howeavis* and *Setosura* are closely allied. They vary in coloration, size of bill and of feet, while *Leucocirca* is still more easily distinguished by the same characteristics, as Swainson was the first to observe. *Rhipidura flabellifera* is divided by the author into eleven subspecies; besides those that are extralimital, several were formerly considered worthy of specific rank. This form is not depicted in the Watling drawings, but the Rufous Fan-tail (*Howeavis*) is given two figures. Six subspecies are here recognized for Australia; those outside need further examination. On page 30 we find a criticism under *Setosura* of Hartert's opinions, and the objection is raised that some of the subspecies allowed by that author show no real relationships. Mr. Mathews himself gives four for Australia, writing *davidi* for *macgillivrayi* preoccupied. *Leucocirca tricolor* should be *Leucophrys* (p. 40); here there has been a great confusion of names. Mr. Mathews makes four subspecies, one of which (*carteri*) is new.

Mastersornis, the genus used by the author for *Myiagra* preoccupied, is taken to have three species. Of the first the synonymy has been much confused, but Latham's

name *rubecula* has priority, and is identical with *plumbea* and *rubiculoides* of Vigors and Horsfield, while Gould's *concinna* is only one of seven subspecies recognized by Mr. Mathews, as opposed to five by Rothschild and Hartert—including extralimital forms. Similarly, *M. cyano-leucus* has priority over *nitida* of Gould, and includes as subspecies *robinsoni* and *nuptus*, the latter of which was considered a full species from the Louisiade Group by Hartert. *M. ruficollis*, which is identical with *latirostris* of Gould, has five subspecies, three being Australian.

The very broad-billed *Machæirhynchus* has one species (*flaviventer*) from Cape York and a large subspecies (*secundus*) from Cairns district, apart from others, outside the Continent. That familiar bird the Restless Flycatcher, or scissors-grinder (*Seisura*), was depicted no less than four times by Watling, and subsequently named four times by Latham. His first name (*inquieta*) holds, and five subspecies are here recognized. Of these, *nana* was considered a full species by Gould, while *rogersi* is now given as a new form from north-west Australia.

Ophryzone is a genus of one species confined to the Cairns district, for Mr. Mathews has separated *lorealis* from *kaupi* under a genus, *Proseisura*. *Piezorhynchus* has one Australian species, originally discovered by Gilbert, which is divided into four subspecies under the head of the extralimital *alecto*. We next come to a group of birds differentiated by Bonaparte as *Symposiachrus*, and allied to *Monarcha*. There is one Australian species (*trivirgatus*) with two subspecies (*albiventris* and *gouldii*), for Sharpe's *medius* is the same as the former, and *stalkerii* is now dropped. *Carterornis leucotis* has had a luckier fate, for it has been named but once, though two subspecies are admitted. *Monarcha* proves to be a composite group, the consideration of which begins in this part. A new genus (*Penemonarcha*) is proposed for Salvadori's species *axillaris*, while *Monarchana* is to be used for *Chrysomela* of Garnot.

Saunders on the birds of Montana.

[A distributional list of the birds of Montana, with notes on the migration and nesting of the better known species. By Aretas A. Saunders. Pacific Coast Avifauna of the Cooper Ornithological Club, no. 14, pp. 1-194; map and 35 figs. from photos. Berkeley, California, 1921.]

The State of Montana is nearly three times the size of England; it lies along the northern boundary of the United States, and its western third is traversed by the Rocky Mountains, which, however, do not rise above an elevation of 11,000 feet, while its eastern two-thirds consists of plateau land forming the prairies. Settlement of Montana came rather late, but much development has taken place during the last ten years and has brought about many changes in the bird-life. The Trumpeter-Swan, the Sandhill and Whooping Cranes, the Sage-Hen and Long-billed Curlew, formerly common, are now becoming rare owing to closer settlement, and Mr. Saunders has done well to place his observations and those of his predecessors on record.

A short introduction is followed by a chapter on distributional areas in Montana, illustrated by a sketch-map. The list of species with their status and selected breeding and migration records occupy the greater part of the volume, and after this comes the introduced species and hypothetical list. The number of species recorded is 332. The work appears to have been very carefully done and will doubtless form a standard list of the birds of the State for some time. The text is enlivened by a number of photographs of nests, eggs, and birds by various contributors excellently well reproduced.

Söderberg on Australian Birds.

[Results of Dr. E. Mjöberg's Swedish Scientific Expeditions to Australia, 1910-1913. xviii. Studies of the Birds of North-West Australia, by Rudolf Söderberg. Kungl. Svenska Vetens. Akad. Handl. Bd. 52, no. 17, pp. 1-116; 3 pls., 25 text-figs. 1918.]

In 1910-13 Mr. Söderberg, a Swedish ornithologist who has recently been paying a visit to this country, accompanied

Dr. Mjöberg, an entomologist, on an exploring and collecting expedition to Australia. He spent some ten months in the northern tropical portion of Western Australia, in the neighbourhood of Derby and Broome, and in this paper he gives us the results of his observations. Mr. Söderberg wisely devoted a great deal of his attention to such subjects as the movements or partial migrations of birds, due to the wet and dry seasons; to the effects of discoloration produced by the extreme dryness of the summer season; to moult, which, like nesting, takes place at varying times of year, and is by no means so fixed to certain definite periods as in the temperate regions of Europe. He also made studies of the nesting-habits of many birds and the methods they adopt for combating their enemies, which appear to be chiefly egg-sucking lizards. All these matters are dealt with in a most suggestive and interesting way in the general portion of the paper. This is followed by the list of the species obtained, with notes on the juvenal plumage, moult, ecology, and other matters of interest.

The paper is of considerable importance, and should not be missed by anyone who takes an interest in the problems of the desert fauna of Australia. It is written in English.

Swarth on the genus Passerella.

[Revision of the avian genus *Passerella*, with special reference to the distribution and migration of the races in California. By H. S. Swarth. University of California Publ. in Zoology, vol. 21, 1920, pp. 75-224; 4 pls., 30 text-figs., including many maps.]

The genus *Passerella* contains a number of Sparrow-like birds, commonly known in America as Fox-Sparrows. All the forms are included under one species, *P. iliaca*, of which Mr. Swarth recognises sixteen races, including the typical one. All the races breed in the far north or at considerable elevations, while the typical race has a very wide distribution, breeding from Alaska to Newfoundland and visiting in winter the middle and southern States east of the Rocky Mts. The other fifteen breed along the western portion of the continent from the Alaska Peninsula through British

Columbia to southern California, and exhibit considerable variation, not only in plumage but in so-called structural characters, such as size of bill and length of tail. Nearly all the western races winter in California, and so great is the variation and so many are the intermediate forms that great confusion has arisen and collectors have great difficulty in identifying individual examples.

Mr. Swarth has therefore prepared this very elaborate and detailed memoir to clear up the many difficulties encountered, and has examined about 1800 specimens, including the types of fourteen of the sixteen races, in the course of his work, which is obviously of a most accurate and detailed character. Four of the more distinct races are illustrated by a beautiful plate by Major Allan Brooks; the other plates are from photographs of the characteristic scenery of the haunts of the birds.

Apart from its usefulness to Californian ornithologists, the paper deals with numerous interesting problems of variation, distribution, and migration.

Swarth on the Birds of Arizona.

[Birds of the Papago Saguaro National Monument and the neighbouring region, Arizona. By H. S. Swarth. Dept. Interior. National Park Service, pp. 1-63; 5 pls. Washington (Govt. Printing Office) 1920. 8vo.]

The Papago Saguaro National Monument is a tract of land a few miles east of Phoenix in Arizona, set aside to conserve certain types of desert vegetation in a region where increased settlement is rapidly changing the appearance of the land. Some eighty miles further east is a large artificial storage reservoir for irrigation purposes, known as Roosevelt Lake, with a bird reservation around it, and the whole region is attracting increasing numbers of visitors for its unique and romantic scenery. This little pamphlet is a guide to the bird-lover who visits this region, and has good accounts of the more common birds to be met with and a list of all those likely to be seen. The National Monuments in the United States are now 24 in number and are

administered by the same service as the National Parks, which are tracts of greater area.

Todd on new South American Birds.

[Descriptions of apparently new South American Birds. By W. E. Clyde Todd. Proc. Biol. Soc. Washington, vol. 33, 1920, pp. 71-76.]

This short paper contains descriptions of three new species and thirteen new subspecies, chiefly from French Guiana and the lower Amazon, where collections have recently been made for the Carnegie Museum at Pittsburg by Mr. S. M. Klages. The new species are as follows:—*Polioptila guianensis*, French Guiana; *Myrmopagis paraisensis*, Para, Brazil; and *Nyctipolus maculosus*, French Guiana.

Townsend on the Birds of Massachusetts.

[Supplement to the Birds of Essex County, Massachusetts. By Charles Wendell Townsend. Memoirs of the Nuttall Ornithological Club, no. 5, pp. 1-196; 1 pl., 1 map. Cambridge, Mass., 1920. 8vo.]

About fifteen years ago Dr. Townsend published an account of the birds of Essex County, which lies on the coast of Massachusetts a little to the north of Boston and contains a number of early New England settlements and towns, the most important of them being Salem, well known even in England for the burning of the witches. Dr. Townsend himself has a summer home at Ipswich further north, and has now prepared a supplemental list of the birds of the county, not only in order to bring his records up to date, but also to show the changes which have taken place during the period which has elapsed, in the distribution of the various species. Legislation has helped to preserve many otherwise vanishing species. On the other hand, the prevalence of insect pests which have done great damage to the woods of this part of the county, has led to spraying the trees with poisonous fluids, to clearing up the brushwood and undergrowth, and to the stopping up

of the holes in tree-trunks. All these have had a bad effect on some of those species formerly abundant. An interesting chapter deals with this subject, and another discusses the number of individual birds in certain limited areas—bird censuses, in fact—but the bulk of the volume is devoted to an annotated list of species with supplementary records and observations.

Bird Notes.

[Bird Notes: The Journal of the Foreign Bird Club. Edited by Wesley T. Page. Ser. 3. Vols. ii. & iii. for 1919 & 1920.]

It is, we regret to say, some time since we noticed 'Bird Notes,' and we have two volumes for 1919 and 1920 now lying before us. Among principal contributors are Mr. Baily W. Shore, Dr. E. Hopkinson, Mr. Amsler, the Marquis of Tavistock, and the editor himself, who appears to be responsible for the last half of the matter contained in the two volumes. We much regret to see that Dr. Lovell Keays, another enthusiastic aviculturist who formerly sent many good articles to this magazine, died in May last year from the effects of mental and physical strain during the three years of the war.

Among the longer and more important contributions to these two volumes must be mentioned the carefully compiled list of all species of birds which have bred in captivity, by Dr. Hopkinson, and the very practical articles by the Marquis of Tavistock on Parrots and the best methods of keeping them either in aviaries or in the open. There are also several contributions from the United States, Australia, and France where M. Delacour has re-established his aviaries destroyed during the war. He sends a detailed account of the successful breeding of the West African Touraco (*Turacus persa*). Only one species of this family had been previously successfully bred in captivity.

We regret to see that there appears to be a strong feeling among the members of the Foreign Bird Club against

amalgamation with the Avicultural Society, which was advocated some little time previously.

In addition to the usual photographs the two volumes contain a number of very artistic drawings of birds from life by Mrs. A. M. Cook. We should like to draw special attention to those of the Hornbills and Toucans appearing in the numbers for December 1919 and January 1920.

Bulletin of the Essex County Ornithological Club.

[Bulletin of the Essex County Ornithological Club of Massachusetts for 1919 and 1920.]

Essex County lies to the north of Boston, and with its ancient town of Salem is one of the oldest and earliest settlements in the United States. The ornithological club, which was formed in 1916 by the bird-lovers of Salem and the surrounding districts, now finds itself sufficiently firmly established to warrant the publication of an annual report or bulletin, and we have been favoured with copies of the first two numbers. The editor is Mr. A. P. Stubbs, and he has collected together a number of short papers and articles dealing with local avifauna of the district by Dr. Townsend, Mr. E. H. Forbush, Mr. C. J. Maynard, and other observers. One of the chief features of the club is an annual excursion in May along the Ipswich river. This has taken place regularly for thirteen years, and on these occasions altogether 136 species of birds have been identified; of these an annotated list occupies some twenty pages of the 1919 Report, and shows the care with which work of this kind is carried out in the United States.

Journal für Ornithologie.

[Journal für Ornithologie. 68 Jahrgang for 1920; 4 parts and a supplement.]

The longer articles in the last volume of the 'Journal für Ornithologie' deal with observations made during the war. Messrs. Baumeister and Kleinschmidt conclude a long paper on the birds of north-eastern France, begun in the

two previous volumes, and a good many subspecies not mentioned in Hartert's Vög. pal. Fauna are discussed at length. Count Zedlitz commences a similar series of articles on the birds of the eastern front, dealing with the collections and summarizing the observations of various other ornithologists, as well as his own, on the birds in the vast swamps of the head-waters of the Pripjet River in southern Poland and the neighbouring parts of Russia—a melancholy region, wild and inaccessible, and but sparsely inhabited by man though swarming with birds. Another paper, also in several parts, dealing with the birds of the Ural region in eastern Russia is from the pen of Mr. H. Grote.

Mr. Oscar Neumann contributes a long list of new genera and of subspecies from different parts of Africa. These, he states, have long been known to him, and indeed many of the types are in the Tring and London museums, which he visited before the war. But, as he mournfully writes, seeing little chance of securing further material for comparison, he now publishes his old notes. The new genera are *Knestrometophon* for *Sigmodus scopifrons* Peters, *Suaheliornis* for *Phyllastrephus kretzschmeri* Rehw., *Sathrocercus* for *Bradypterus barakæ* Sharpe, *Vibrissosylvia* for *Callene cyornithopsis* Sharpe, and the new races described are sixteen in number.

Another paper by Count Zedlitz reviews the eastern races of *Certhia familiaris* and *C. brachydactyla*, and includes descriptions of several new races; while Dr. Reichenow has some remarks on the South American genus *Cinclodes*, and also adds to the number of described races. The last supplementary part is entirely occupied with portion of a work on the birds of Egypt by Prof. Koenig, of Bonn. It contains the accounts of the Insectores (*i. e.* Picarians and their allies) and the Coraces (Orioles, Bulbuls, Starlings, and Crows). Full diagnoses of the genera and species are given; also the names in English, French, and Arabic, and detailed accounts of the nesting-habits and eggs of such species as breed there.

L'Oiseau.

[*L'Oiseau*. Revue d'Histoire naturelle appliquée. Vol. i. for 1920. 12 nos.]

This is a new journal which has recently reached us. It is published by the Société nationale d'Acclimation of France, and consists of two parts, the first dealing with Mammalogy, Pisciculture, Entomology, Botany, and Colonization; the second with Ornithology. The President of the Ornithological Committee is M. Jean Delacour, well known to English aviculturists as a most successful breeder of wild birds in captivity. The new journal is run very much on the same lines as our British 'Avicultural Magazine,' and many of the contributors to the first volume now under review hail from this side of the Channel. After an introduction on the beauty and usefulness of birds and the delight which we find in studying their ways and habits, by Mr. Edmond Perrier, who is the President of the Society and the Director of the Museum of Natural History, Mr. Seth Smith follows with an account of the bird-houses in the London Zoological Gardens. There are also articles by Mr. H. D. Astley and Wesley T. Page.

The principal French contributors are M. Delacour, who has an interesting notice on his experiences with living Humming-birds, and M. A. Decoux, who describes some remarkable Weaver-bird hybrids, one of which (*Zonogastris melba* $\times$ *Estrilda phœnicotis*) is figured in colour. There are two other coloured plates of the Gang-gang Cockatoo, *Callocephalon galeatum*, by M. A. Millot. M. Delacour is hoping to be able to breed this rare species in captivity. He has a fine male which he hopes to mate with a hen belonging to the Marquis of Tavistock.

There are many other illustrations, reproduced from photographs and drawings, to accompany articles by other aviculturists. We wish every success to the new venture of our brave allies.

Oologists' Record.

[The Oologists' Record: a Quarterly Magazine devoted to the advancement of Oology in all parts of the World. Vol. i. No. 1, March 1921. Published by Harrison & Sons, London.]

We have been favoured with a copy of a new magazine devoted to Oology. It is edited by Mr. Kenneth L. Skinner, and contains several pleasant articles on birds and bird-nesting. The first, by C. F. B., contains a list of species found breeding in the neighbourhood of Mombasa, some of those met with being by no means common, but we should like to know that they were all identified by collecting the skins. The second article, by Mr. J. Bishop, is on birds met with along the western front in France; the most interesting note is on the Little Bustard, whose breeding place was probably located though the eggs were not found. Captain Pitman has a third article on bird-nesting in Palestine, but he only deals in the present number with the Rufous Warbler and the Whitethroat, which are treated at considerable length.

A picture of the Kite by Frohawk adorns the cover, perhaps not the best frontispiece that could be chosen for an Oological Magazine.

South African Journal of Natural History.

[The South African Journal of Natural History. Vol. ii. for 1920.]

With this publication the former Journal of the South African Ornithologists' Union is now incorporated, and we have recently received the two numbers for 1920, making up the second volume. Among the papers on birds is one by the late Lieut. C. G. Finch-Davies on the avifauna of the South-West African Protectorate, which adds to our knowledge of the distribution of South African birds. Verreaux's Eagle (*Aquila verreauxi*) is recorded from the Protectorate for the first time. It was found nesting on a krantz near Windhuk. Mr. Finch-Davies has also identified *Lanius luebberti* Reichw. as an immature *L. minor*.

Some further field-notes on Verreaux's Eagle are contributed by Mr. R. E. Symons, whose observations were made in the Drakensberg mountains between Natal and Basutoland.

Mr. R. Godfrey continues his account of the birds of the pleasant and diversified valley of the Buffalo river in the eastern Cape Province. His first paper deals with the Tits and Sugarbirds, and his second with the White-eyes, Bulbuls, Larks, and Pipits.

The little island of St. Croix in Algoa Bay, where Bartholomew Diaz is stated to have erected a cross or "padrao" to mark his discovery in 1488, has recently been visited by Mr. J. Hewitt, who found Penguins (*Spheniscus demersus*) and White-breasted Cormorants (*Phalacrocorax lucidus*) breeding there in large colonies. His article is illustrated with two photographs.

Yearbook of the Dutch Bird-Club.

[Club van Nederlandsche Vogelkundigen : Jaarbericht no. 10 for 1920.]

This Yearbook for 1920 is issued in four parts instead of one annual volume, and contains a good deal of interesting matter. The editor, Baron Snouckaert van Schauburg, contributes two accounts of collections recently made in Sumatra by Heer van Heijst, which contain several birds new to this island, viz. :—*Falco peregrinus ernesti*, *Monticola solitarius pandoo*, *Criniger finschi*, and *Kenopia striata*. He also has his annual report on the occurrence of rare birds in Holland from October 1919 to September 1920.

Heer H. C. Siebers discusses the status and relations of *Corvus cornix* and *C. corone*, and whether they should be considered as distinct species or only subspecies, and Heer A. Hiverson continues his essay on the birds of the Javanese rice-fields ; Heer C. G. B. ten Kate has a note on an old work on whaling and the natural history of the Arctic regions by C. G. Zorgdragers, published in 1728, and endeavours to identify the birds mentioned therein. Finally, the third part is occupied by a paper by Dr. E. Stresemann in German on the origin of the fauna of the Alps and other mountain ranges of central Europe.

List of other Ornithological Publications received.

- COUNT ARRIGONI DEGLI ODDI. Reprints of nine recent papers.
 GURNEY, J. H. Ornithological Notes from Norfolk for 1920. (Brit. Birds, xiv. pp. 242-252.)
 RILEY, J. H. Four new Birds from Celebes and Five new genera of Birds. (Proc. Biol. Soc. Washington, vol. 34, pp. 51-58.)
 WITHERBY (Edited by). A Practical Handbook of British Birds. (Pt. x.)
 Auk. (Vol. xxxviii. no. 2.)
 Avicultural Magazine. (Vol. xii. nos. 3-5.)
 Bird-Lore. (Vol. xxiii. no. 2.)
 Bird Notes. (Vol. iv. nos. 3-4.)
 British Birds. (Vol. xiv. nos. 11-12.)
 Brooklyn Museum Quarterly. (Jan, 1921.)
 Canadian Field Naturalist. (Vol. xxxiv. no. 8.)
 Condor. (Vol. xxiii. no. 2.)
 Emu. (Vol. xx. no. 4.)
 Fauna och Flora. (1921, pt. 2.)
 Gefaut. (Vol. xi. fasc. 1.)
 Irish Naturalist. (Vol. xxx. nos. 4-5.)
 Jaarbericht Club van Nederlandsche Vogelkundingen. (Vol. xi. pt. 1.)
 Journal für Ornithologie. (Vol. 69, part 2.)
 L'Oiseau. (Vol. ii. nos. 3-4.)
 Ornithologische Monatsberichte. (Vol. 29, nos. 5-6.)
 Revue Française d'Ornithologie. (Nos. 144-145.)
 Scottish Naturalist. (Nos. 111, 112.)
 South Australian Ornithologist. (Vol. vi. nos. 1-2.)
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XXX.—*Letters, Extracts, and Notes.***Plumages of Nestling Owls.**

SIR,—In the April number of 'The Ibis' (*antea*, p. 348) Mr. Bonhote refers to four plumages of the young Eagle-Owl which he had described in the 'Bulletin B. O. C.' (vol. xxvii. pp. 82-83). The question is of some importance, as it involves the number of generations of plumage. I should therefore like to point out that I cannot agree with Mr. Bonhote that the Eagle-Owl has three generations of

plumage before acquiring feathers which are exactly like those of the adult. The first is a shortish buffish-white down. According to Mr. Bonhote, this is followed by a long down. I find, on the other hand, by examination of specimens (in the Brit. Mus. and at Tring) that the first down is immediately succeeded by the juvenile plumage which Mr. Bonhote calls "(3) a downy feather." The specimens in the British Museum clearly show the shortish white down attached to the tips of these downy feathers. I venture to suggest that Mr. Bonhote has confused this plumage in its early stages of growth on the living bird with a down. As I have already stated ('Practical Handbook,' vol. ii. pp. 78-79), it is of a very loose and downy nature, and this is especially noticeable on the rump and belly. There is considerable variation in the structure of the juvenile feathers of the Owls. Mr. Meade-Waldo in his letter (*antea*, p. 348) refers to the Scops Owl as having no intermediate down between the first and the feather plumage, and compares it with the Barn-Owl, but this comparison is confusing and not correct. The juvenile plumage of the Scops Owl is more compact than that of other British Owls, but it differs from that of the adult, and is a true juvenile plumage. The juvenile plumage of the Hawk-Owl is very little less compact, while that of the Eagle-Owl represents the other extreme, being looser and more down-like even than that of the Snowy Owl. The first feathers of the Barn-Owl, on the other hand, are exactly like those of the adult, and I consider that the second nestling down of this species is equivalent in generation to the downy juvenile plumage of other Owls, which have only one nestling down.

H. F. WITHERBY.

Hampstead,
June 12, 1921.

Correction to "The Birds of Lower Egypt."

SIR,—I beg to draw attention to an error in my recent paper in 'The Ibis,' where I record having identified *Alda arvensis arvensis* as occurring in Egypt. An examination of my skins shows, however, that this is not justified, but that both *A. a. cinerea* and *A. a. cantarella* do occur.

I would also draw attention to the Bull. B. O. C. for May 1921 in which Mr. M. J. Nicoll describes the Egyptian form of the Singed Sand-Grouse as a new sub-species under the name of *Pterocles senegalensis floweri*. As the skin which has been made a type of this sub-species was apparently obtained by me, it would perhaps prevent future complications if my nomenclature was brought up to date.

W. RAW.

170 New Bridge Street,
Newcastle-on-Tyne,
June 13, 1921.

News from Capt. Lynes and Mr. Willoughby Lowe.

We have not heard from Capt. Lynes since his letter dated 20 February last, when he had reached the Jebel Marra in Dafur and was encamped at an elevation of 5250 feet. He writes:—

"We left El Obeid (railhead) on 6 January with a camelcade of 23 beasts—we ourselves on donkeys. Our camels were excellent. We did not hurry, and took twenty-four days to do the 420 miles to El Fasher. En route we got several interesting things—perhaps the most useful was two full clutches of eggs of *Ortyxelos*. I sent Percy Lowe a full description of our first clutch, and the second was exactly similar. Evidently they breed mainly after the rains, when the ground has dried up a bit.

"Then, Lowe has been doing great things in the big bird and small mammal line. We have got two fine Kori Bustards (old male weighed 21 lbs., and doubtless when fat and breeding would have scaled much more) and a

denhami. We also have two females of Savile's Bustard, of which I had only cocks last trip. The Kori is the large Bustard which I did not get on the last journey, but was conspicuous by reason of its lavender-grey looking wings in flight. There is a tremendous lot of lavender-grey about the upper wing-spread and the back is a warm light olive-brown in colour (turkey speckle-feathers).

"We stayed a week at Fasher with Col. and Mrs. Savile, who were like everyone we meet in the Sudan—kindness itself, and were able there to make all preparations for Jebel Marra in ease and comfort, even luxury.

"On 8 February we set sail for Jebel Marra, this time to enter the mountains at the north-east end of the massif, and at the end of nine days arrived here at Kurra, 5250 feet, and the limit of camel transport. Kurra is the residence of one of the eight Shartar's or Fur-Princes of Jebel Marra, and our plans for the high altitudes are now in progress. A large number of donkeys are necessary now, and we hope to start off in a few days' time. Meanwhile, there are nice things here—not only in the clear running-water line, but in birds. However, I will not go into them more than to say we have just shot a Secretary Bird, male adult, the first we have seen. Unfortunately, it was moulting a bit, and all the head-quills are not fully grown, but they seem very broad.

"It is an unusually cold year; even at El Fasher, 2600 feet, we had $1\frac{1}{2}^{\circ}$ F. of frost one night, and here at 5250 feet on night 16/17 February we had 8° F. of frost, mercifully no wind. The day temperature, however, goes up to 87° or so. But we are both very fit, and much looking forward to the unknown ahead of us."

Mr. Willoughby Lowe writes to Mr. D. Bannerman, who has kindly allowed me to print part of his letter, from Kalokitting, 1 April, 1921, as follows:—

"We arrived here last night, having come through from the north of Jebel Harra. The northern part is, so far as I can judge (only having seen the south in the distance), by far the best part. We discovered a large high plateau

at 10,000 feet where we could play golf or anything, quite level or nearly so with nice grass and gazelles. We camped here for about a week among the heath and bracken, reminding one of home. We ascended all the peaks, which reach up to about 10,600 feet, and the whole place is now well mapped out. Birds are scarce high up.

“Since we left the high ground, we have been gradually working south-west along the foothills, and are now nearly south of the range. We are now going to ascend the southern end of the range. It is all very charming, but Lynes took the cream of the birds last time. Still, we have done well, especially with Mammals, and I anticipate a good number of new species. Of birds, we have got, I believe, a new Lark, a Rock-Pigeon, and a *Cisticola*; also a large and beautiful Stork (between 7000 and 10,000 feet), and large Bustard and several Eagles new to the Sudan.”

The Plumage Bill.

After a long controversy in Committee on the Plumage (Prohibition) Bill, an agreement was reached on 10 May between the principal supporters and opponents of the measure. There is, therefore, a reasonable chance that the Bill will pass into law before this notice appears in print. The terms of the agreement are as follows:—

- (1) The Act to come into operation nine instead of six months after the passing thereof.
- (2) Within four months after the passing of the Act the Board of Trade shall appoint a joint Advisory Committee consisting of an independent chairman, two expert ornithologists, three representatives of the feather trade, and four other independent members. The function of this committee will be to advise the Board of Trade as to additions to and removals from the existing schedule (ostrich and eider-duck) of birds whose plumage may be imported.

This agreement has been come to principally through the exertions of a small committee consisting of Lord Rothschild, Sir Sidney Harmer, Dr. Lowe, and representatives of the trade, who have had many meetings at the Natural History Museum before they arrived at this compromise, which is apparently agreeable to both parties concerned.

Personalia.

We learn that Dr. Erwin Stresemann has been appointed Curator of Birds of the Zoological Museum of Berlin, in succession to Dr. Anton Reichenow who retires, having reached the age of 74. Dr. Reichenow succeeded Dr. Cabanis in 1892, and had therefore been about thirty years in the Berlin Museum. Dr. Stresemann spent some months in England in 1913 working out the collection of birds made during the second Freiburg Moluccan Expedition in which he took part in 1910-1912; during this journey he visited several of the East India Islands, including Bali and Ceram. Since the war he has been working with Dr. Hellmayr in the Museum at Munich.

Mr. A. de C. Sowerby, M.B.O.U., has recently left England for China, where he will spend the next few years carrying on explorations in the south and west of a biological nature, on behalf of the United States National Museum at Washington. He intends visiting the mountainous areas of Chekiang and Fokien, thence working round to Canton Province and Kwangtung, and visiting Hainan Island. Birds will occupy a special place in his programme, and he hopes to make extensive collections.

Mr. J. R. Kinghorn of the Australian Museum at Sydney has recently been appointed a first-class assistant in charge of the collection of Birds in that Institution.

THE IBIS.

ELEVENTH SERIES.

VOL. III. No. 4. OCTOBER 1921.

XXXI.—*Bird Notes from Southern Spain.*

By J. H. STENHOUSE.

THE following notes have been compiled from observations made in southern Spain between December 1918 and July 1920, while the writer was serving at the Royal Naval Hospital, Gibraltar. Anyone using that fortress as a daily base for ornithological work in Spain finds it very difficult to get any distance into the country, and for that reason no attempt was made to cover a great amount of ground, but efforts were confined to working a small district as thoroughly as possible. Most of these observations, therefore, were made around Algeciras and in the neighbourhood of the Sierra Carbonera (Queen of Spain's Chair); but the local enforcement at Algeciras in 1920 of a Spanish law prohibiting the firing of a gun between March 1st and August 1st, hampered work near there so much, that, whenever possible, attention was given instead to Almoraima Cork Woods, 16 miles to the north. On three occasions, through the kindness of my old friend Colonel Verner, visits of a few

days at a time were paid to the neighbourhood of the Laguna de la Janda, and the Retin Hills. Notes on migration were regularly made, and it was hoped that constant watching at the Europa Lighthouse, Gibraltar, would give good results ; but the nature of the light (double occulting with red and dark sectors), and still more the meteorological conditions which prevail in the usually clear atmosphere of the Straits, have rendered the return a meagre one. "Bird Nights" were few and far between, and it was only occasionally that a bird struck the lantern. It is possible that were the observations continued over a series of years, valuable information might be obtained, and more so if collaboration could be carried out with the lighthouses at Capes Spartel and St. Vincent, where, it is said, that at times many birds are observed. For some at present inexplicable reason the Europa light was only attractive to birds when the wind was westerly. When migrants were seen on the Rock after an easterly wind, even though the meteorological conditions seemed favourable, the invariable report from the lighthouse was, that none had been seen in the rays.

Attention was chiefly given to the Passeres, and owing to want of time no skins of the larger birds were preserved. With regard to these no information was obtained which is not already recorded in Irby's 'Ornithology of the Straits of Gibraltar.' The more one tries to do ornithological work in southern Spain, the more one must admire the results obtained by that excellent ornithologist, whose earlier observations, at all events, were made from the same base as that from which I worked and under much more difficult conditions as to transport.

It has been assumed that the 12 to 15 miles stretch of water which lies between southern Spain and Morocco, is a well-defined boundary line between the ranges of many sub-specific forms of birds. The result of these observations is to dissipate that theory to a considerable extent : the Hawfinch, Dartford Warbler, Fantail Warbler, Wren, Blackbird, Robin, and probably the Great Tit, Mistle-Thrush, and Martin, formerly considered subspecifically different, must now be

recognised as the same on both sides of the Straits, and it is probable that once the birds of the Riff district in Morocco have been thoroughly gone into, further discoveries will be made, showing that there is practically no difference between the majority of the birds of the northern Moroccan coast and their representatives on the Spanish side.

I beg here to acknowledge my indebtedness to Captain W. M. Congreve for his great help in obtaining for me specimens of the breeding birds from Almoraima, to the light-keepers at Europa for their many acts of kindness and assistance, and to Mr H. F. Witherby for kindly determining some of the subspecies for me. Mr Witherby's remarks on these have been added to the notes, and are enclosed within brackets.

Of 260 skins brought back, the great majority are in the Royal Scottish Museum, Edinburgh: the others are in Mr. Witherby's collection.

***Corvus corax* subsp.**

Breeds fairly commonly. A party of twelve was seen on ploughed land near Laguna de la Janda on 10 December: no specimens were obtained.

***Corvus monedula*.**

Not observed.

***Garrulus glandarius fasciatus*. 2 ♂; 3 ♀; 1?**

Plentiful in Almoraima Cork Woods, but not observed in the cork-woods round Algeciras, or in the Sierra Retin to the westward. Specimens obtained in winter had been feeding solely on acorns. The wing-measurements of two males were 188 mm., of three females 172 to 178 mm., being as long as, and not shorter than, typical *G. glandarius*.

[There are several differences in a series of the south Spanish form as compared with the typical Jay, but some individuals are difficult to distinguish, and the form cannot be regarded as very well differentiated. The streaking on the crown is broad and pronounced, but not more so than it is sometimes in the typical bird; in the centre of the upper breast is a dark grey patch usually well marked, but this is

also occasionally the case in the typical bird; the bill is decidedly deeper, and this is perhaps the best character.—H. F. W.]

Sturnus vulgaris.

Not observed either winter. Its usual migration route must lie farther to the westward.

Sturnus unicolor.

A pair seen in Almoraima Cork Woods on the 6th of June were probably nesting. They are very uncommon. Capt. Congreve found a nest with two fledged young on 30 May in the same district.

Oriolus o. oriolus.

A common summer visitor, first seen 23 April, on which day several were noted migrating at El Valle, west of Tarifa, having apparently just crossed the Straits.

Last observed on 6 September.

***Chloris chloris aurantiiventris.* 2 ♂; 1 ♀.**

Breeds. Its numbers are greatly increased in late October and November, when a heavy toll is exacted by bird-catchers on the passing migrants. The return journey was not much in evidence; a small flock of both sexes was seen 28 April at Sierra Retin, and a female struck the Europa lantern on the same date. The autumn migrants of this species passed during the day. It has seldom been recorded as on passage at night.

***Coccothraustes c. burryi.* 4 ♂; 2 ♀.**

Not uncommon, but difficult to observe. 4 males had wings ranging 98 to 101 mm., and 2 females 92 and 96 mm.

[The two females match female examples of *C. c. burryi* exactly, and are very much paler and greyer than any examples of the typical form, but the males are somewhat intermediate in colour. The differences, however, between this and the typical form are always more marked in the female. The size is slightly large for *C. c. burryi*.—H. F. W.]

***Carduelis c. weigoldi.* 2 ♂; 2 ♀; 1 juv.**

Resident. Many migrants come south in October and remain during the winter, when large flocks are met with

all over open country. These flocks do not finally break up till April. The wings of males obtained measured 74 and 77 mm. and of females 74 mm.

[The Goldfinch from Portugal and Algeciras is remarkable in being very nearly allied to *C. c. parva* of Madeira, from which it differs only in being of a rather darker shade of umber on the crown, mantle, sides of breast, and flanks. *C. c. africana* is found on the eastern side of Spain, *e. g.*, Malaga, Valencia, and the Balearic Isles, but the limits of the ranges of the two forms cannot yet be exactly defined.—H. F. W.]

Spinus spinus. ♂ & ♀.

According to the bird-catchers this bird only visits Andalusia every seventh year. They were not observed during the first winter, but on 1 November, 1919, a large migration began, and many no doubt crossed to Africa. Throughout the winter they were exceedingly plentiful among the alder-trees in the sotos at Almoraima. Evidence of a return journey from Africa was obtained in February. They were last seen in the first week in March.

Serinus serinus. ♂.

Resident: also arrives in numbers at the end of October, large flocks being at times seen, and many must cross the Straits. The spring migration was not noted.

Passer d. domesticus. 3 ♂.

Abundant. Wings 77 to 78 mm.

Fringilla c. cœlebs. 5 ♂ (1 juv.); 1 ♀.

Resident. Is rather a late breeder, fresh eggs not being found till May. Its numbers are increased in winter. In autumn this bird was noticed as abundant in open scrub, where it feeds largely on the seeds of a *Thymellea* which flowers in September.

Acanthis cannabina mediterranea. 2 ♂; 3 ♀.

Found throughout the year, but more numerous in winter, many migrants arriving in October and November. Noted in open country in the low grounds till 22 March. Breeds chiefly among the scrub on the hillsides, fresh eggs being

found towards the end of April. A pair evidently breeding was seen in the Almoraima Cork Woods on 6 June. Wings of two breeding males measured 75 and 77 mm., and of one breeding female 75.

***Emberiza calandra.* ♂.**

Common and resident, breeding not only on the lower ground but well up the hillsides in rough scrub, and also occasionally in the cork-woods. At the end of June the males became silent. They were heard again in song on 11 December.

***Emberiza cirrus.* 1 ♂ ; 2 ♀.**

Common and resident. In the winter they were not observed in flocks to the same extent as in the eastern Mediterranean.

***Emberiza c. cia.* 1 ♂ ; 3 ♀.**

Breeds in considerable numbers on the Queen of Spain's Chair, coming comparatively low down. A male was seen on 11 January and a female was shot on 7 November, but the bird is only casual in winter. The only evidence obtained of autumn migration was on 27 September, and in spring a female was seen at Gibraltar on 2 March, with other migrants, after an east wind. This bird is recorded as being single brooded, but in all probability two broods are at times reared : young fully fledged were found on 14 May, and fresh eggs at the beginning of June. The position of the nests found varied : one was in a rock crevice, another at the foot of a small bush, while three were about two feet off the ground and well concealed in thick heather.

Emberiza hortulana.

Only once observed, namely, on 2 May, when a female, apparently on passage, was seen at Laguna de la Janda.

***Alauda a. arvensis.* 1 ♀.**

Migrant and winter visitor. First observed 22 October, when one struck the aerial at Gibraltar. Noted in flocks at the end of October ; they remained till March.

Lullula arborea.

Met with only in the breeding season in the Almoraima Cork Woods, where they were local. No specimens were obtained.

Galerida cristata pallida. 3 ♂; 1 ♀.

Common and resident.

Galerida t. theklæ. 3 ♂; 1 ♀; 1 juv.

Resident. The opinion was formed that the Crested Larks which bred in the lower grounds and the cornlands were *cristata* and those found on the scrubby hillsides were *theklæ*, and birds shot confirmed this opinion. On the Queen of Spain's Chair, Crested Larks (three shot were *theklæ*) bred commonly. In the winter none were observed on this ground, but of six caught at that season on the low grounds near Algeciras and sent to me, four were *theklæ* and two *cristata*. It was evident that the birds breeding on the rough hillside left there on the approach of winter. The only other evidence of movement obtained was on 19 October, when, following a strong easterly gale, three Crested Larks arrived near Europa Point with many migrants. They remained there during the winter and disappeared in March; the subspecies could not be ascertained.

Calandrella b. brachydactyla. 2 ♂; 1 ♀.

Resident and migrant. Is a local breeder near Algeciras. One was seen in the Hospital grounds on the 21st of September, and a male struck the Europa lantern on the 2nd of October. Evidence of spring migration was obtained on 13 April when two were seen on passage, and on 14 April when one was caught alive at the lantern.

Melanocorypha c. calandra. 1 ♂; 2 ♀.

Found near Algeciras in winter, but not observed in the breeding season. Breeds in abundance on the plain at Laguna de la Janda.

Motacilla a. alba. 1 ♂.

Winter visitor. First seen 17 October. Later became abundant. Most depart in March; a late bird was seen on 11 April.

Motacilla lugubris.

Seen on several occasions. No specimen obtained.

Motacilla c. cinerea. 1 ♂ ; 1 juv.

Resident, breeding behind Algeciras on the Rio de Miel. More abundant in winter.

Motacilla f. flava. 1 ♂ .

Passes on migration. Seen in small parties at the beginning of October and again in spring, the last date being 10 May, when one struck the wires at Gibraltar. The southern form, *M. f. cinereocapilla*, was not identified with certainty.

Anthus t. trivialis. 1 ♀ .

First observed on autumn migration 27 September, and passed in small numbers until 29 October ; not noted on spring migration.

Anthus pratensis. 1 ♀ .

Abundant in winter ; first seen in autumn on 17 October, last seen in spring on 25 March.

Anthus c. campestris. 2 ♂ ; 1 ♀ ; 1 juv. ♂ .

First observed on 7 May, when it was very numerous on passage. A few pairs remained to breed on the low ground near Algeciras and also on the Queen of Spain's Chair. Last seen 17 August, when an old bird was feeding full-grown young.

Certhia brachydactyla ultramontana. 4 ♂ ; 2 ♀ .

Common resident in the cork-woods. The wings of four males measure 59 to 61 mm., and of two females 58 mm.

Regulus i. ignicapillus. 1 ♂ ; 2 ♀ .

Resident, and joining with Tits in winter. Wing ; males 52 mm., females 47-50.

Parus major excelsus? 6 ♂ ; 2 ♀ .

Generally distributed in the wooded districts. Breeds at Gibraltar.

[These Great Tits and a series from Portugal appear to me intermediate between *Parus m. major* and *P. m. excelsus*, but are perhaps nearer the latter race. The white wedge on the outer tail-feathers is more restricted in the majority than in *P. m. major*, and the colour of the mantle is darker and like *P. m. excelsus*; on the other hand, the outer webs of the inner secondaries are not so grey as in *P. m. excelsus* nor are the underparts so bright a yellow. The bills are, on the whole, larger than in *P. m. major* and like *P. m. excelsus*, while the wings of fourteen males measure 72–77 mm., or about the same as in *P. m. major*, namely, 73–79.—H. F. W.]

***Parus cæruleus harterti*. 9 ♂.**

Abundant in the cork-woods. Breeds also at Gibraltar, apparently an extension of its range since Irby's time.

[I have compared these with a large series from Portugal (*P. c. harterti* Tratz, type-locality Oporto) and find them to be the same. This form is very near *P. c. ogliastro*, but the mantle is darker and more bluish-green. The wings of the series measure: males 57–65 mm., females 57–62.—H. F. W.]

***Parus cristatus weigoldi*. 6 ♂; 2 ♀; 2 juv.**

Abundant in Almoraima Woods and not uncommon behind Algeiras, but not observed in the Retin Hills.

[This form was described by Tratz from Portugal, and I have compared this series with a series from Portugal. They are intermediate in colour between *P. c. scoticus* and *mitratus*, the colour of the upper-parts being not quite so dark as in *P. c. scoticus*, and having in some examples a slight rusty tinge on the rump, cheeks, and underparts, while in others the underparts are even whiter than in *P. c. scoticus*. The wings of the whole series measure: males 60–63, females 57–60 mm.; this is smaller even than *P. c. scoticus*.—H. F. W.]

***Ægithalus caudatus irbii*. 1 ♂; 3 ♀.**

Only observed in the neighbourhood of the Long Stables at Almoraima. Wings measure: male 58, three females 55–56 mm.

Lanius s. senator. 2 ♂ ; 1 ♀ juv.

First observed in 1919 on 4 April and in 1920 on 2 April, after which dates the birds became numerous. A belated migrant was seen at Gibraltar on 23 May (the wind had been strong easterly for two days). They begin to nest soon after arrival ; a full clutch of six eggs was found in the Sierra Retin on 4 May. In autumn none were seen after 17 September.

Sylvia c. communis. 2 ♂ ; 1 ?

Common on migration ; not found breeding near Algeciras, but nests at Almoraima. First seen 27 March ; a male struck the lantern at Europa 29 March. Many passed during April. The first evidence of autumn migration was on 19 August, when one was found dead at Gibraltar under the telegraph wires ; last was seen on 22 October.

Sylvia simplex. 1 ♀ .

Seen only on passage. First noted 11 April ; a female struck the Europa lantern on 30th of that month. In autumn observed on passage 17 September.

Sylvia a. atricapilla. 2 ♀ .

Resident. Numbers are greatly increased during migration. In spring they began to pass through on 25 February, both sexes travelling together, and passage continued throughout March. Autumn migration was difficult to observe, but was in full swing in the middle of September and continued during October. Males struck the aerals on 9 October and 22 October. It was heard in song at Gibraltar on 8 January.

Sylvia m. melanocephala. 4 ♂ ; 2 ♀ .

Resident and common. Breeds early. Noted building on 26 February ; first egg laid 9 March. A nest watched had first egg laid 28 March : incubation period 13 to 14 days ; fledgling period 11 days. Nestlings examined had no down ; inside of mouth orange : flanges pale yellow. The pair were building their second nest on 23 May : it contained three eggs on 31 May.

Sylvia conspiciolata.

Not met with, though constantly looked for. The statement ('Ibis,' 1911, p. 743), that it is common on the Sierra Carbonera, cannot be confirmed. A nest, from which the young had flown, was found on 18 June, 1919, between the rivers opposite Gibraltar, and identified as belonging to this bird. It exactly resembled the nests of this species I have seen at Malta. This place is close to the ruins of Carteia, a locality given by Irby as the most likely one near Gibraltar where it would be met with. Unfortunately, the spot could not be revisited. I quite agree with Capt. Lynes ('Ibis,' 1912, p. 473) that this bird is very local in southern Spain.

***Sylvia h. hortensis.* Orphean Warbler. 1 ♂; 2 ♀.**

Was found breeding in small numbers in the cork-woods behind Algeciras, and a pair seen in June at Almoraima were also breeding. This bird was recorded by Irby as very rare in the vicinity of Gibraltar, and it is possible its numbers are now slowly increasing. It is abundant in the Sierra Retin to the westward, and for a migrant breeds early, eggs considerably incubated being found on 4 May. In autumn last observed on 17 September: its arrival in spring was not noted.

***Sylvia s. subalpina.* 3 ♂; 1 ♀.**

First observed in 1919 on 12 March, in 1920 on 11 March, and passes in small numbers during March and April. A male was killed at the lantern on 2 April. The return migration takes place in September: a young male was killed at the lantern on the 18th of that month. A pair seen in Almoraima Cork Woods on 25 April were noted as probably breeding, and this was confirmed later by Captain Congreve, who found four nests. As Irby failed to find it breeding near Gibraltar, an extension of its breeding range is probable. It was not observed near Algeciras as a breeding bird.

***Sylvia undata toni.* 6 ♂; 3 ♀; 1 juv.**

Common and resident on the hillsides. They are early breeders; hard-set eggs were found at the end of March, and

young were seen leaving the nest on 11 April. The nests were chiefly in small low furze bushes and very difficult to find; they were also placed in heather. The wings of six males ranged from 48 to 51 mm., of three females 48 to 50. The only evidence of migration obtained was the presence of one low down, close to the sea at Gibraltar, along with other migrants on 3 March; the wind had been strong easterly for two days.

Favier records it as a migrant at Tangier. Hartert (Vögel. Fauna, p. 601) gives, on Jourdain's authority, the eggs of this southern Spanish bird as distinctly smaller than those of *S. u. dartfordiensis*, thus confirming the bird's smaller size.

[These are quite typical of the north African form. How far north it extends has yet to be decided, but certainly Portuguese birds north of the Tagus are not of this subspecies.—H. F. W.]

Agrobates g. galactotes. 1 ♂.

Summer visitor, nesting not uncommonly in the prickly pear gardens. First seen 9 May. A pair were noticed on 17 August feeding young just able to fly. The only record of their departure was on 18 September, when one was seen at the lighthouse. This was the only occasion on which a bird was identified in the beams. It came up wind with its tail spread out, rendering recognition easy, swerved at the last moment and struck the dark tower above the lantern hard, knocking out a cloud of feathers; unfortunately it could not be found afterwards. Nestlings examined were black-skinned with no down, inside the mouth orange-yellow; flanges white; no tongue spots.

Locustella n. nævia. 1 ♂; 1 ?

Twice obtained on autumn migration. First on 14 September on the banks of the stream behind Algeciras: the second among dry palmetto scrub on 12 October.

Cettia cetti.

Seen and heard close to Algeciras on the banks of Rio de Miel, but no specimen obtained.

Acrocephalus s. scirpaceus. 1 ♂; 2 ♀; 1?

Not uncommon among the alders and oleanders on the banks of the Rio de Miel during October. (First seen on the 6th, last on the 22nd.) In spring one record: a female struck the Europa lantern on 17 May.

Acrocephalus palustris. 1 ♀.

A female was shot 4 October among dry bracken in a cork-wood.

Acrocephalus a. arundinaceus. 1 ♀.

Twice seen on autumn migration. One on 14 September and another on 29 September; on both occasions among the bushes on the banks of the stream behind Algeciras. The stomach of one shot contained a freshwater shrimp.

Acrocephalus schœnobæus. 1 ♂.

A male (exceedingly fat) struck the lantern at Europa on 30 July.

Acrocephalus aquaticus. 1?

One was obtained on 22 October haunting palmetto scrub.

Hypolais polyglotta. 4 ♂; 1 ♀; 1 juv. ♂.

Numerous in the breeding season. First seen in 1919 on 11 April (an early date), in 1920 on 24 April. One was killed at the lantern on 3rd of May. None were observed after the end of August.

Hypolais pallida opaca.

Seen on only two occasions: is not common.

Phylloscopus t. trochilus. 1 ♀.

Noted on passage in March and again in September. It could not be found during the winter. Several doubtful birds were shot, and all proved to be Chiffchaffs. No trace could be found of this bird breeding. Irby records it as breeding, and also as present during the winter. The subject requires further investigation, and can only be settled by the production of a winter skin and a bird from the nest. Is

it possible that confusion has arisen in the breeding season from the resemblance of the local Chiffchaff's eggs to those of the Willow-Warbler?

Phylloscopus c. collybita. 2 ♂ ; 4 ♀ .

Found all the year round, but much more numerous in winter. It breeds in fair numbers in the woods round Algeciras and at Almoraima, and from the presence of a pair in the Sierra Retin on 24 April, it may be assumed they nest there also. During the winter months they are found generally distributed both in wooded and in open country. During March there were passage movements, and the opinion was formed that the winter visitors then departed. Throughout most of the month it was difficult to find these birds in the cork-woods behind Algeciras, but at the end of the month they were again in evidence, and the song of the male, a double note followed by about five descending notes, could then be heard. A nest was found partly built on 19 April about two feet up in a gorse bush. It could not be visited till 10 May and then was found in ruins, but the domed nest with feather lining and remains of pink-spotted eggs sufficiently identified it. A pair was located near, and the hen was watched building a new nest in a bramble. A week later the hen was shot from the nest, which contained four eggs with pink spots closely resembling Willow-Warblers. The nest was scantily lined with feathers (seven of which were those of the Oriole). These birds are indistinguishable from typical *collybita*. One male from Almoraima has an aberrant wing formula, the second primary being 2 mm. longer than the 7th but shorter than the 6th. The song of the male seems to change as the summer advances: in June "chip chip chip chip" followed by the descending notes was heard, and at times four or five sharp monotones only. The typical "chip chop" of the bird was heard in the Alameda Gardens, Gibraltar, on one occasion only, and in January.

Phylloscopus b. bonelli. 3 ♂ .

Breeds in some numbers in Cobre Wood behind Algeciras, and abundantly at Almoraima. Nests seen were invariably

on the ground and had, as a rule, a few hairs in the lining. It was once noted on migration, on 3 April. The Wood-Wren (*Phylloscopus sibilatrix*) was not observed.

Turdus v. viscivorus. 1 ♂; 1 juv.

Resident in small numbers in the cork-woods at Almoraima. Young were seen abroad on 25 April. The adult is much greyer, especially on the rump, than British specimens. A juvenile shot in June compared with British juvenile of the same age is much greyer both above and below, being almost devoid of any tinge of buff colour.

Turdus p. philomelus. 1 ♀.

A winter visitor in small numbers. Latest date seen, 29 March.

Turdus merula algirus. 2 ♂; 8 ♀; 1 juv.

Resident. Many, however, migrate. In the middle of July they collect in family parties, and in September were very numerous in the woods behind Algeciras. Their numbers gradually thinned until the middle of October, when they were reduced to winter numbers. There was an increase in March, but it was less noticeable. The wings of two males measure 122 and 123 mm., the tails 120 mm. Of eight females, wings 112 to 118 mm., tails 106 to 116 mm.

[These are like the Algerian form, but if anything whiter on the chin and with paler edgings to the feathers of the underparts. How far north they extend we do not know, but Blackbirds which I have seen from Portugal and other parts of the Peninsula seem to be of the typical form, and I cannot differentiate *T. m. hispaniæ*.—H. F. W.]

Monticola solitaria.

Resident, and passes through on migration in small numbers. It was observed migrating in autumn on the 4th of October and again on the 22nd, and on spring migration many passed Gibraltar on 10 March; only males were seen.

Phœnicurus p. phœnicurus. 1 ♂.

A bird of passage first noted on 24 March ; a male struck the lantern on 6 April. Much more abundant on autumn migration. First seen 6 September, during the remainder of that month and throughout October it was much in evidence ; last observed 29 October.

Phœnicurus o. gibraltariensis. 1 ♂.

Winter visitor and bird of passage : not observed breeding near Gibraltar. In autumn first noted on 25 October. In the spring the first movement noted was on 28 February ; by 23 March the winter visitors had gone : the only record after 26 March was a belated female seen 8 May.

Erithacus r. rubecula. 1 ♂ ; 4 ♀ ; 1 ?

Migrant and winter visitor. At the beginning of October they were very abundant in the woods behind Algeciras, the males being in full song. Most of these passed on, but during winter they were common. The return journey took place in March and early April. One female struck the Europa lantern on 23 March.

Erithacus r. witherbyi. 3 ♂ ; 4 ♀.

The breeding form is a rare bird behind Algeciras, only two pairs being noted. At Almoraima in the damp sotos it is much more plentiful, but still cannot be called common.

[The Robins from Algeciras are puzzling but must, I think, be of the Algerian form, though they may belong to the Moroccan *E. r. atlas*, as they are very slightly darker and less olivaceous than *E. r. witherbyi*. The difference is, however, very small, and the Moroccan form may possibly prove not separable when birds in fresher plumage than those which Capt. Lynes obtained are collected.—H. F. W.]

Luscinia megarhyncha. 1 ♂.

Abundant summer visitor. First noted on 6 April : their departure in autumn was not observed.

Cyanosylvia suecica cyanecula. 2 ♂ ; 2 ♀.

Irby records this bird as rare in this neighbourhood, and gave it as his opinion that it passed farther to the eastward.

In spring one was seen behind Algeciras on 27 February, and in autumn many were found skulking among the oleander bushes on the banks of the Rio de Miel. They were first noted 17 September, and last seen 5 October. The local bird-catchers knew the bird well, and gave it the name of "Camancho." On being shown one and asked if he knew it, one man promptly produced another from his pocket; it had been caught in a spring-back trap set for larks.

Saxicola r. rubicola. 4 ♂; 5 ♀.

Found throughout the year. They are early breeders; fresh eggs were found on 28 February (full clutch). An unusual site for this bird's nest was noted on the Queen of Spain's Chair on 28 May, being a hollow in a rock face about two feet above the ground and quite open: the nest contained three young and an addled egg. Local breeding birds undoubtedly migrate. There was a great diminution in their numbers at the end of September, but any further movement on their part was masked by the arrival of migrants from the north at the beginning of October. Large numbers of Stonechats arrived at Gibraltar on 17 October; the great majority passed on, but some, chiefly in pairs, remained during the winter. A return movement in spring was observed beginning on 17 February, and continued until 20 March, after which date no Stonechat was seen on the Rock. The breeding birds and all the migrants obtained with the exception mentioned below, were of the typical race.

Saxicola r. hibernans. 1 ♀.

One female obtained on 12 October is indistinguishable from British birds of corresponding date, and is probably a migrant from Portugal.

Saxicola rubetra.

Chiefly a bird of passage but occasionally seen in winter. Two females were seen 11 January, 1919. They were observed passing through, both males and females, on 16 April and again in autumn, 27 September.

Ænanthe æ. ænanthe. 1 ♀ . .

Passes on migration. First seen 22 March, 1919, and 2 April, 1920 ; one struck the Europa lantern 14 April. In autumn many were seen at Gibraltar 17 October ; they had all passed on next day. Two seen near Tàrifa on 2 May were probably the Greenland form (*Æ. æ. leucorrhoa*), but no specimen was obtained.

Ænanthe h. hispanica. Black-eared form. 1 ♂ ; 2 ♀ .

First seen 22 March.

Black-throated form. 1 ♂ ; 2 ♀ .

First observed 12 March. Both forms bred on the Queen of Spain's Chair and also on some rough ground at El Cobre behind Algeciras. In 1919 their numbers were about equal. In 1920 the black-throated were in the proportion of about 4 to 1 of the black-eared. Autumn migration began early ; birds of the year were seen on the move on 10 August, and again during the month and in September ; the last record was 21 September, when amongst them was a black-throated male. Birds in the brown stage of plumage were once seen : on 7 May, 1919 ; they were very wild.

Ænanthe l. leucura. 1 ♀ .

Resident in very small numbers. It was observed passing on migration on 20 March. In autumn seen on passage on 21 September, and a considerable number on 20 October. A nest found in a rock crevice on the Queen of Spain's Chair on 9 May, 1919, had over 200 stones in its foundation. Another on 12 May next year, was in a hollow in a low cliff and had no stones at all. Both contained eggs. In the latter instance the hollow was so small that there was no room for a breast-work.

Cisticola c. cisticola. 3 ♂ ; 1 ♀ ; 1 juv.

Breeds abundantly near Algeciras in the wheatfields, and after the wheat is cut, in grassy patches. There are many late broods : a young bird not fully grown was seen on 17 September. In August and September they were common along the river-banks, but departed in early October,

and during winter only a very occasional bird was seen. At that season of the year, they are very common in the snipe-marshes at Laguna de la Janda. They return to the wheat-fields about the end of March. The local name for this bird is "Tumanavilla."

[Fantails from various parts of the Spanish Peninsula are like the northern African birds, and these must all be called *Cisticola c. cisticola*, those from other parts of Europe (*C. c. harterti*) being distinguished by their buff and less grey colour (see Bull. B. O. C. xl. p. 119).—H. F. W.]

***Prunella m. modularis.* 1 ♂.**

An uncommon winter visitor; three only were seen. The bird obtained has the wing-formula of the so-called *occidentalis*, which subspecies I am unable to distinguish.

***Troglodytes t. kabylosum.* 4 ♂, 1 ♀; 1 juv.**

Judging by the number of nests found this bird is not at all uncommon, but they are skulking and not often seen.

[The upper-parts are decidedly less rufous than in *T. t. troglodytes* and like the northern African form, but the underparts are considerably more barred than is usual in *T. t. kabylosum*, though the bills are fine as in that form. In Portugal the typical subspecies is found.—H. F. W.]

***Muscicapa g. grisola.* 1 ♂; 1 ♀.**

First seen in 1919, 7 May, in 1920 on 5 May, and the passage continued till 23 May. A very abundant nester in the cork-woods. Autumn passage was prolonged: during the latter half of September and the first week of October, they were continually in evidence; a single bird was seen on 22 October.

***Muscicapa a. atricapilla.* 1 ♀.**

Seen only on passage. In spring a solitary bird was seen on 14 February (the Gibraltar district seems to lie out of the line of its spring migration). Two were seen on 4 May at the Sierra Retin. In autumn it was common, being first observed 21 September, continually during October, and last seen on 4 November.

***Hirundo r. rustica.* 2 ♀.**

First seen 13 February, 1919, and in 1920 on 7 February. Observed collecting mud for nests on 7 March, and at Laguna de la Janda had young nearly fledged on 29 April. The breeding birds took their departure from Gibraltar about 15 August, when it was noticed their numbers had greatly diminished. After that date their appearance was irregular and they were considered migrants from the north. On 22 October after a strong east wind they arrived in hundreds. They were last seen 7 November.

***Hirundo rufula.* 1 ♂.**

A single bird was seen at the Laja del Císcar near Laguna de la Janda on 26 April, 1919, hawking for flies in company with Martins and Urag-Martins. On 2 May, 1920, a pair were seen at Don Pedro Cliff about eight miles distant from Císcar. They were settling down collecting mud and were evidently preparing to breed. Where these birds were found was about thirty miles distant from the Moorish coast, and as they are found in Morocco there is no reason they should not, at times, cross the Straits. Col. Verner informs me that a bird of this species had been seen in the same neighbourhood several years before.

***Delichon urbica meridionalis.* 2 ♂ ; 4 ♀.**

First seen in 1919, 29 March, and in 1920, 14 March. They breed in large numbers at Algeciras and in many cliffs around. The breeding birds at Algeciras left the district in the first week of August, and only odd birds were seen after the 7th of that month. The wings of two males measure 105 and 101 mm., of the four females 100, 101, 102, and 105 mm., being, with the exception of one male, within the measurements given for this subspecies. This one bird is also the only one whose measurement between secondaries and the tip of the wing equals that of typical birds measured. Under these circumstances, and taking into account that in autumn the local birds migrate two months before the northern birds appear, I consider the placing of them, for the time at least, in this group justifiable.

Delichon urbica urbica.

Spring migration uncertain, being masked by local breeding birds. In autumn odd birds, probably of this race, were seen late August and September. On the 6th of October, they were very plentiful in company with Swallows, and on the 16th many hundreds were at Gibraltar. All had gone by 21 October. Last seen on 7 November.

Riparia r. riparia.

Not common. Many crossed Laguna de la Janda plain on 25 April in company with Swifts. Noted in autumn first on 27 September, again seen 6 October, and last on 12 October.

***Riparia r. rupestris.* 1 ♂.**

Seen throughout the year. Many passed through on migration 17 to 21 October. On 20 October, at 10 A.M., one struck the telegraph wires over my head and was captured. This bird was in company with others making their way to the African coast. Its stomach was quite empty: apparently it had started its journey that morning without hunting for food.

***Dryobates major hispanus.* 2 ♂; 3 ♀.**

Found fairly commonly in the cork-woods, and easily obtained in winter when associating with Tits; at other times rather shy. On one occasion ants were found in the stomach, and twice pieces of acorns.

Lynx t. torquilla.

Seen only once, on 19 January.

***Micropus apus apus.* 1 ♂.**

First seen 2 April, 1919, and in 1920, 29 March. Bred abundantly at Gibraltar. The local birds had mostly gone by 31 July, and only occasional birds were seen after that date. Last observed 17 August. On 25 April, it was seen migrating in large numbers across Laguna de la Janda. There was a steady stream of birds for about two hours in the late forenoon making north across a light easterly wind. From the direction of their flight, they must have struck the Spanish coast at Zahara de los Atunes.

Caprimulgus r. ruficollis. 1 ♂ ; 1 ♀ .

Breeds in small numbers : first observed 26 April.

Last seen 12 October.

Merops apiaster.

Summer visitor : it arrived both years on 11 April. In autumn was first seen migrating on 10 August, and many flocks were noted migrating by day on 14 September.

Alcedo atthis ispida.

Seen on autumn migration on 30 August, and odd birds observed both on the seashore and on the stream in September and October. In spring only once noted, viz., on 22 March.

Glareola pratincola.

A small colony of about twelve pairs was found near Tapatanilla at Laguna de la Janda. Two nests had eggs on 2 May. One had two eggs somewhat incubated. This is a very early date.

Totanus maculatus.

One was seen on the seashore on 30 May in company with a Sanderling.

Charadrius a. alexandrinus. ♂ & ♀ .

Breeds in fair numbers between the rivers opposite, and also on the seashore to the north of Gibraltar.

Calidris arenaria. 1 ♂ .

One shot on 30 May showed no sign of breeding. It had lost a leg, and so probably had not migrated.

Podiceps fluviatilis.

One struck the aerial at the north front, Gibraltar, on 7 October.

Alectoris rufus intercedens. 2 ♀ .

Commonly distributed.

[These are paler and of a greyer brown on the upper-parts, and especially on the rump, upper tail-coverts, and central tail-feathers, than birds from northern Portugal, and this confirms Hartert's conclusions (see Nov. Zool. xxv. p. 63).—H. F. W.]

XXXII.—*Some Notes on the Winter Avifauna of the Camargue.* By LUDLOW GRISCOM, M.A.Ö.U., M.B.Ö.U. : American Museum of Natural History, New York City.

FOR a region which has long been famous as a bird paradise, remarkably little has been written about the Camargue, due in part perhaps to its comparative isolation and the primitive living conditions required in so dreary and uninhabited a waste. The classic work on this region is the 'Ornithologie du Gard et des Pays circonvoisins' by J. Crespon, a rare work published by private subscription in 1840, a copy of which I was so fortunate as to obtain in Paris and took with me. It is remarkable for its excellent detailed accounts of habits and occurrence of the various species, founded on many years of personal collecting. Two other works appeared shortly thereafter—'Faune Méridionale du Midi de la France' (Crespon, 1844), an elaboration, chiefly territorial, of his earlier work; and the 'Richesses Ornithologiques du Midi de la France' (Jaubert and Barthélemy-Lapommeraye, 1859). The latter work is chiefly of value for its information about the bird-life of Marseilles and the Riviera, being almost entirely a compilation so far as the Camargue is concerned. Crespon's original work is not quoted by them, oddly enough. In 'The Ibis' for April 1895 and October 1898, Mr. Wm. Eagle Clarke published two very interesting and valuable papers on this region, based on visits in May and early June, 1894, and part of September, 1896. The first paper contained a map and so excellent and adequate an account of the topography of the region, that repetition would be useless, and readers are referred to it for information on these points.

I have wandered for many years in Europe with an increasing determination to visit the Camargue. Twice I had been in Arles, but was absolutely unable to find the time for the briefest kind of a side-trip. While with the American Expeditionary Forces in 1918, a conversation

with Dr. Chalmers Mitchell crystallized anew this determination ; and a week's leave of absence around Christmas of 1918 gave me the longed-for opportunity. Stopping long enough in Paris to procure Crespon's book, I arrived at Les Saintes Maries the morning of 29 Dec., and remained until the afternoon of 1 Jan., 1919. It was a somewhat strenuous vacation, as the number of hours in the field each day was exactly the number of hours of daylight with a liberal margin at each end for a good start and a return. The country within five miles of the village to the north and east was thoroughly explored. On 31 Dec., I left the village shortly after dawn in a two-wheeled wagon with the manager of a bull-farm about three miles west of the centre of the Étang de Valcarès, where we arrived an hour later. He was a local Provençal poet of note, and while my teeth rattled in my head, he favoured me with specimens of his art, and it did not discourage him at all that I disclaimed any knowledge of the language ! At the bull-farm I changed very thankfully to horseback, and we rode to the edge of the Étang, where there was a farmer living in a picturesque stone manse which his ancestors had built six centuries ago. He became my guide to the haunts of the Flamingo and the islands at the south end of the Étang de Valcarès. It was a great disappointment to miss this famous bird, whose temporary absence was accounted for by the natives as due to the low water caused by a long drought. In every other respect, however, the day was one of the most eventful ornithologically I have ever had. Not the least interesting part of the day was the return after dark. The owner of the horse assured me that its home was Les Saintes Maries, and that it would get there without any assistance from me. It did. We started about 8 P.M. without a moon, with not even a track or a bridle-path the first two-thirds of the way. The only sign of life was a lighthouse twenty-five miles to the south-west. The wind sighed over the plains, an occasional flock of Geese honked overhead, or a Lapwing complained at our approach. Even the horse seemed to feel the loneliness, as it would occasionally stop, look round,

and would not go on until I had spoken to it or patted it. The going was slow, as there were constant detours to avoid marshes or ponds, but at 11.30 p.m. sharp that horse halted before the door of its stable in the village.

In his second paper Mr. Eagle Clarke mentioned the rapid advance of civilization in the Camargue, and somewhat pessimistically predicted the passing of the Flamingo and the ornithological glory of this region. I could not see that civilization had progressed materially since his account was written, and I doubt if the bird-life has decreased markedly. The small native population still takes a heavy toll of eggs in the breeding-season, but the winter bird-life seems quite safe. They all have guns, and most of the men went hunting every day I was there, but the total game of the village was two Mallards and one Spotted Crake : surely a negligible factor ! Birds were exceedingly abundant and many comparatively tame, the dominant features being the number and variety of Hawks, always noteworthy in western Europe, and the almost unbelievable quantity of waterfowl. On 31 Dec., I saw fifty-three species of birds, and more individuals than on any other day anywhere where I have been in either hemisphere. The Étang de Valcarès was black with waterfowl in every direction, and the chorus of voices coming over the silent waters from countless thousands of Mallard and Widgeon made an unforgettable impression.

On 2 Jan. the day was spent south and west of Arles. Birds were decidedly common, but exceedingly shy and wary, so much so that it was impossible in many cases to approach sufficiently near to identify them.

It would be absurd to claim that the following list of species was complete. Still it is believed that it will give some definite idea of the present-day winter bird-life of this interesting region, about which no definite contributions have been made since the days of Crespon and his friends eighty years ago, when French interest in ornithology was at its zenith. The writer's military duties absolutely precluded general collecting, which would have greatly decreased the time spent in the field and the amount of territory covered

in any event. To those who are a little shy of sight identifications, the writer can only say that he is about as familiar with the birds of western Europe as he is with those of his own country. Even so, these notes would not have been submitted had it not been for the encouragement of the Editor of 'The Ibis.' The order of families and the nomenclature follow the 'Hand-List of British Birds,' the most convenient at hand.

Corvus corone corone L.

Only two individuals seen near Les Saintes Maries. They probably straggle down to feed in the marshes from the more wooded country to the north and west.

Pica pica pica L.

Abundant everywhere, not even objecting to wading in shallow water.

Chloris chloris chloris (L.).

A small flock of Greenfinches present in the outskirts of Les Saintes Maries, where there were some gardens, a few hedges, and what by courtesy might be called a pasture. Common near Arles.

Carduelis carduelis carduelis (L.).

Four birds with the Greenfinches at Les Saintes Maries. Fairly common near Arles.

Carduelis cannabina cannabina (L.).

A few Linnets with the other Finches.

Fringilla cœlebs cœlebs L.

A single Chaffinch was seen near the farmhouse by the Étang de Valcarès. Common at Arles.

Passer domesticus domesticus L.

A flock of ten birds at Les Saintes Maries. Common at Arles.

Passer montanus montanus (L.).

A flock of six birds at Les Saintes Maries. Abundant near Arles.

***Emberiza citrinella citrinella* L.**

A single bird seen near Arles. Crespon says this species is common only in cold weather.

***Emberiza schœnielus schœnielus* L.**

A common species in the marshes. Efforts to find *E. palustris* Savi were unavailing.

***Calandrella brachydactyla brachydactyla* (Leisler).**

Only two birds seen in the wastes east of Les Saintes Maries. Not supposed to occur in this région in winter according to the old French authors, and its presence possibly due in part to the very mild and warm fall.

***Lullula arborea arborea* (L.).**

A few birds in the "pasture" near Les Saintes Maries. One in full song 30 Dec.

***Alauda arvensis arvensis* L.**

Abundant throughout the Camargue. Common near Arles.

***Anthus trivialis trivialis* (L.).**

Crespon calls the Tree-Pipit of rare occurrence in winter, and 'Les Richesses' does not mention it at this season. There was a good-sized flock of these birds with the Wood-Larks and Finches in the outskirts of Les Saintes Maries. The old French authors may have been mistaken about its status in winter. At any rate, I saw two birds near Angers on 17 Jan., 1920, much farther north.

***Anthus pratensis* (L.).**

Abundant in the wastes of the Camargue.

***Anthus spinoletta spinoletta* (L.).**

The Water-Pipit was mingled with the flocks of Meadow-Pipits. Only a few birds were positively identified, and it was probably commoner than my observations would indicate.

***Motacilla cinerea cinerea* Tunstall.**

A single Grey Wagtail was seen near Les Saintes Maries.

Motacilla alba alba L.

The White Wagtail was seen near Arles only.

Parus major major L.

Seen near Arles only. The scarcity of Tits was rather surprising.

Regulus regulus regulus (L.).

A single Goldercrest seen in some bushes near the Étang de Valcarès.

Regulus ignicapillus ignicapillus (Temm.).

Two birds seen near Arles.

Phylloscopus collybita collybita (Vieill.).

Two birds seen near Arles.

Phylloscopus trochilus trochilus (L.).

The Willow-Wren was common in the tamarisks near Les Saintes Maries. Not given by Crespon as a winter resident, though now known to occur sparingly in Mediterranean countries.

Cettia cetti cetti (Marm.).

Cetti's Warbler, while given as a resident by Crespon, is apparently not common in winter. Only two birds were seen in a ditch, densely overgrown with bushes, several miles north of Les Saintes Maries. The remarkable notes given as I approached their haunts, alone betrayed the presence of this secretive bird. I found that they could be "squeaked up" readily if I remained absolutely motionless. Any effort to stalk them was a dismal failure; they simply melted away.

Cisticola cisticola Temm.

A single Fantail Warbler was flushed in some very thick marshy growth near the Étang de Valcarès. Its small size and the black, white, and chestnut tail, especially conspicuous as it flies away from you, easily distinguish it from the other shy Bush- and Marsh-Warblers of the region.

Acrocephalus aquaticus (Gm.).

One of the surprises of the trip was the discovery that this species was apparently not uncommon in the marshes.

There is no difficulty in distinguishing it in life from the Sedge-Warbler, with which I am familiar. The broad buffy stripe down the centre of the crown, bounded on both sides by an even broader blackish one, is a very diagnostic field-character. The back and rump are more conspicuously streaked, and all the birds I saw had some narrow streaks on the sides.

The Aquatic Warbler was found only in what I should call a tussock-marsh, where the water was comparatively fresh and the vegetation not more than a foot high. I saw none in bushy places along ditches or in the reed-beds. While very secretive in habits, it could not be called exactly shy. A tussock is a rather restricted environment, and the bird is forced to fly to reach the next one, and in this way its presence can be discovered. It dives hastily into the base of the tussock, and the slight wobbling of the vegetation is the only sign of its presence. About once every two minutes the performance is repeated. It will not flush unless the tussock in which it is hiding is actually kicked. By taking advantage of this habit, and the fact that when unalarmed it tends to travel in a straight line, a satisfactory observation can finally be made. Mark the tussock in which the bird has taken refuge, and make a detour, and seat yourself on another tussock directly in the probable line of progress. After about a minute's perfect quiet the moving of the vegetation will prove that the danger is supposed to be over, and as likely as not the bird will fly in your direction. Your presence arouses more curiosity than anything else if perfect silence and quiet is maintained, and a little head and bright eye will emerge for a few seconds from the grass to inspect you. Apparently the ear is more easily offended than the eye. On one occasion a bird mounted to the summit of a tussock and sat quietly for several minutes, while I was sitting perfectly still about twenty-five feet away.

There seems to be considerable question as to the status of this species in the Camargue. Crespon states emphatically that it is a resident, and mentions having killed several in winter. 'Les Richesses' gives it as a common migrant in

April and September, a few remaining to breed. The former states that he never personally met with the Sedge-Warbler, while the latter work calls it a rare migrant. Mr. Eagle Clarke met with neither species on either of his trips. Modern handbooks state that the winter home of the Aquatic Warbler is not known for certain. I am not aware that Crespon's positive statement has ever been disproved.

***Sylvia melanocephala melanocephala* (Gm.).**

A single bird of this species was studied for half an hour in a thick clump of tamarisk bushes near Les Saintes Maries. It is easily distinguished from the Blackcap by the white in the tail and its much smaller size. Another was seen on a stony bush-covered hillside near Arles. Two other Warblers seen near Arles may have been Blackcaps, but I was unable to get a satisfactory view. Both species are resident.

***Sylvia (Melizophilus) undata undata* (Bodd.).**

Not uncommon in the wastes east of Les Saintes Maries. Very shy and about as hard to observe as a field-mouse. I have never seen a bird do the "disappearing act" more perfectly. One was seen to put down in an isolated clump of sea-blite without any nearby vegetation. It took me but a few seconds to reach this clump, but the bird wasn't there when I arrived, and I was unable to rediscover it.

? *Turdus pilaris* L.

A single very wild bird seen near Arles, probably this species, but the identification by no means satisfactory.

***Turdus merula merula* L.**

A single male seen on two occasions near Les Saintes Maries. Mr. Eagle Clarke did not meet with this species in the Delta, where it seems to be a decidedly rare bird.

***Saxicola rubetra rubetra* (L.).**

Apparently a rare bird in western Europe in winter, and its presence was probably due to the remarkably mild fall. Two birds seen in the truck-patches near Les Saintes Maries, and another near Arles. Not given as occurring in winter by the old French authors.

***Saxicola torquata rubicola* (L.).**

A few in the wastes east of Les Saintes Maries, and one near Arles.

***Phœnicurus ochrurus gibraltariensis* (Gm.).**

A single male seen near the Étang de Valcarès in the garden of the old farm.

***Erithacus rubecula rubecula* (L.).**

Apparently a winter visitor only to the Delta of the Rhone. Common near Arles, and a single bird near Les Saintes Maries.

***Troglodytes troglodytes troglodytes* (L.).**

It was a considerable surprise to find the Wren by no means uncommon in the marshes north of Les Saintes Maries, where it preferred the ditches overgrown with bushes affected by Getti's Warbler—surely an unusual association.

***Gecinus viridis viridis* (L.).**

A single bird near Arles. Very much wilder than in any other part of Europe where I have encountered this species.

***Falco columbarius æsalon* Tunstall.**

The little Merlin was fairly common in the marshes north and east of Les Saintes Maries.

***Falco tinnunculus tinnunculus* (L.).**

Common everywhere.

***Falco naumanni naumanni* Fleisch.**

An adult male Lesser Kestrel was very well seen both sitting and flying on 29 Dec., the smaller size and clear unspotted back being good field-marks. An ordinary Kestrel was seen before the other was out of sight. This species is considered an uncommon migrant by the old French authors. I do not know of a winter record for France.

***Aquila maculata* (Gm.).**

The Greater Spotted Eagle is given as a winter visitor to the marshes of the Midi. I saw five birds in all during my stay.

Buteo buteo buteo (L.).

Chiefly a winter visitor to the Camargue. Only two birds seen.

Haliaëtus albicilla (L.).

A fine adult seen on the shore of the Étang de Valcarès near the Isle Mornue.

Circus æruginosus (L.):

The Marsh-Harrier was the most abundant Hawk in the Camargue.

Circus pygargus (L.).

A single adult male Montagu's Harrier was seen near the Étang de Valcarès. Considered a rare winter visitor by the old French authors.

Circus cyaneus (L.).

The Hen-Harrier was common and was seen daily in the marshes. Though I never saw any open hostility, a Hen-Harrier would immediately leave a hunting-ground if a Marsh-Harrier came along.

Circus swainsoni Smith (= *C. macrourus* auct.).

A magnificent adult male was seen near Arles. At a distance in the bright sunlight it looked practically white, with dark wing-tips and tail and a few dark spots on the neck and upper back.

Accipiter gentilis gentilis (L.).

Apparently a rare bird in the Midi. Some boys flushed an adult in a pine-wood near Arles, and it flew out into the open over my head, giving me an excellent observation.

Ardea cinerea L.

This species was common, and apparently replaces the Purple Heron in winter, which is rare at that season. Certainly I did not succeed in finding any.

Egretta alba alba (L.).

A single example of this magnificent species was seen towering among a flock of twenty-four Common Herons on

30 Dec., about five miles north of Les Saintes Maries. Considered as a rare winter straggler by the old French writers, it must now be a very rare bird in France.

***Phœnicopterus antiquorum* Temm.**

While I saw no Flamigoes personally, there can be no doubt that it still exists in considerable numbers in the Camargue, as all the natives know the bird well. A flock was seen three days before my arrival flying east near the village of Les Saintes Maries, the number estimated variously at 500–700. The natives claim that in winter this bird occasionally disappears if the water is very low (as was the case during my visit), or when a norther is blowing. They have no theory as to where it goes. They appear to be perfectly familiar with the plumage of the young bird, and claimed that about one-quarter of the individuals in the flock mentioned above were young.

***Anser* sp.**

A few Geese were heard at night, and one small flock seen at dawn, when colour details could not be distinguished. Probably the Grey Lag-Goose, other species, according to Crespon, occurring only in severe cold weather.

***Tadorna tadorna* (L.).**

Two Sheld-Ducks observed on the Étang de Valcarès, 31 Dec.

***Anas platyrhyncha* L.**

The Mallard was almost incredibly abundant, by day flocking on the open waters of the larger Étangs, and flying into the fresher marshes and reed-bordered ponds by night to feed.

***Anas strepera* L.**

Only two Gadwall were positively identified. It is undoubtedly common.

***Anas crecca* L.**

The Teal was fairly common.

Anas penelope L.

The Widgeon was very abundant.

Spatula clypeata (L.).

Only one small flock seen.

Dafla acuta (L.).

Very common.

Nyroca fuligula (L.).

The Tufted Duck was the only one of its subfamily observed—a small flock on the Étang de Valcarès. The presence of the diving-ducks in numbers is a matter of cold weather, according to Crespon, so it is not surprising that I found so few.

Mergus sp.

A small flock of large Mergansers seen on the Étang de Valcarès. Probably the Goosander, which is the commoner species according to Crespon, but the absence of adult males made a satisfactory identification impossible.

Phalacrocorax carbo carbo (L.).

A common bird; they were seen daily sunning themselves on the fish-weirs in flocks.

Colymbus cristatus cristatus (L.).

A single Great Crested Grebe observed in the surf near Les Saintes Maries.

Columba oenas L.

Two Stock-Doves were seen at the bull-farm west of the Étang de Valcarès. They were flushed from a little hollow in which a stream ran where there were some real trees. Two Pigeons were seen near Arles, so shy and wild that it was impossible to approach them within several hundred yards.

Burhinus oedicnemus oedicnemus (L.).

The strange cry of this bird was heard before dawn in the wastes near the Étang de Valcarès. It seems to be well known to the natives.

Squatarola squatarola (L.).

The Grey Plover was not common. A flock of ten was seen in the vast flats of the Isle Mornue in the Étang de Valcarès, and a single individual was seen near Les Saintes Maries.

Vanellus vanellus (L.).

The Lapwing was not common, and was absent from the south-western portion of the Camargue.

Calidris alba (Pallas).

A large flock of Sanderling seen on the beach near Les Saintes Maries on 29 Dec.

Erolia alpina alpina (L.).

The Dunlin was common in large flocks.

Tringa ochropus L.

A flock of eight with Redshanks in one of the fresher marshes north of Les Saintes Maries.

Tringa totanus (L.).

The Redshank was widely distributed in small numbers.

Numenius arquata arquata (L.).

The Curlew could not be called common, compared with its numbers on the coasts of England and Holland. It was seen daily in small numbers.

Numenius tenuirostris Vieill.

It was a delightful surprise to see a flock of five of these birds near the Étang de Valcarès, apparently much tamer than the common Curlew, as they allowed a much closer approach. The much shorter and less curved bill is an excellent field-mark, and at any distance the bird has a lighter colour-effect.

Limnocryptes gallinula (L.).

Two Jack Snipe were flushed from a marshy meadow near the Étang de Valcarès.

Larus ridibundus (L.).

The Black-headed Gull was very common, outnumbering all the other species put together. Not seen off-shore.

Larus canus canus L.

Not uncommon.

Larus argentatus subsp.

Only two Herring-Gulls were seen, much to my surprise. These were on the Étang de Valcarès, and were not near enough to permit me to say whether they were the northern bird or *cachinnans*, though I am familiar with both.

Larus fuscus fuscus L.

A few scattered birds seen daily.

Porzana porzana (L.).

Two Spotted Crakes were flushed in a little marsh north of Les Saintes Maries, and one was shot by a local nimrod who had joined me, a feat of which he seemed very proud. It is much more interesting alive than dead. This same bird was served to me by my landlady that evening, beaming with pride, and was by all odds the worst morsel of bird flesh my jaws ever worked on. I greatly prefer Parrots and Woodpeckers!

Fulica atra atra L.

A large flock of over one thousand birds on the Étang de Valcarès. The Gulls seemed to get great amusement in chivying them, and would repeatedly swoop down on the rear of the flock, whereupon all would patter wildly over the water for several hundred yards, the rearmost birds tumbling over those in front, so dense was their formation.

Caccabis rufa rufa (L.).

This Partridge was common in the northern part of the Camargue, and several coveys were seen from the train, to which they appeared entirely indifferent. A small flock was seen near the Étang de Valcarès.

As a matter of interest I append a list of birds seen on 31 Dec., to give some idea of what a full day can produce, and also the comparative numbers of individuals :

Lesser Black-backed Gull, 2.	Montagu's Harrier, 1 ♂.
Herring-Gull, 2.	Greater Spotted Eagle, 1.
Black-headed Gull, 100.	Sea-Eagle, 1 ad.
Cormorant, 25.	Merlin, 2.
<i>Mergus</i> sp., 15.	Kestrel, 2.
Mallard, 100,000.	Sky-Lark, 100.
Widgeon, 100,000.	Wood-Lark, 2.
Teal, 50.	Magpie, 25.
Pintail, 1000.	Greenfinch, 6.
Shoveler, 6.	Linnet, 4.
Sheld-Duck, 2.	Goldfinch, 4.
Tufted Duck, 15.	Chaffinch, 1.
<i>Anser</i> sp., 6.	House-Sparrow, 10.
Grey Heron, 4.	Reed-Bunting, 4.
Coot, 1000.	Meadow-Pipit (common).
Jack Snipe, 2.	Tree-Pipit, 10.
Dunlin, 500.	Water-Pipit (several).
Redshank, 4.	Wren, 2.
Curlew, 1	Dartford Warbler, 3.
Slender-billed Curlew, 5.	Willow-Wren, 6.
Grey Plover, 10.	Gold-crest, 1
Lapwing, 5.	Aquatic Warbler, 3.
Stone-Curlew, 6.	Fantail Warbler, 1.
Red-legged Partridge, 4.	Black Redstart, 1.
Stock-Dove, 2.	Robin, 1.
Marsh-Harrier, 6.	Blackbird, 1.
Hen-Harrier, 1 ♀.	

XXXIII.—*A note on the genus Lampribis in East and Central Africa.* By JAMES P. CHAPIN, M.A.O.U., American Museum of Natural History.

Lampribis olivacea and *Lampribis rara*.—Both these rare African Ibises range eastward to the Ituri Forest, where a single specimen of each was collected by the American Museum Congo Expedition at Avakubi. A second example of *Lampribis rara* was also secured at Niapu, in the Bomokandi region of the Uele.

L. rara Rothsch., Hart., & Kleinschm., is apparently the less rare of the two, and was seen singly or in pairs along small forest-brooks or in wooded swamps. Our two specimens, representing both sexes, have been compared with two specimens from the River Muni and one from Liberia, in the Museum of the Philadelphia Academy of Natural Sciences. While these three West African birds all have the abdomen somewhat darker than in those from the Ituri, there seem to be no differences of importance between them.

Lampribis olivacea (Du Bus) was only observed on one occasion, when a pair were flushed from the ground and amid dense undergrowth, some little distance back from the bank of the Ituri. Our single specimen, a male, shows no evidence of immaturity and measures: wing 335 mm., tail 133, culmen 106, bill from posterior angle of nostril 94, tarsus 70, middle toe with claw 69.

From the original description and plate of Du Bus there seemed to be no doubt of its identification as *L. o. olivacea*, and Mr. Bannerman's recent notes * confirm my opinion.

Lampribis akeleyorum (Chapman) † is really the eastern representative of *L. olivacea*, being larger, with wing-coverts shining green (as opposed to a more coppery tinge in our *L. o. olivacea*), and its plumage of a warmer brown tone throughout. Notwithstanding that the tips of the wings are badly worn, they measure 358 mm. in the male, 362 in the female. The specimens of *Lampribis* with which Dr. Chapman compared them, from the Philadelphia Academy of Natural Sciences, were really those of *L. rara* mentioned above, but wrongly labelled as *L. olivacea*.

That the extent of bare skin about the face is a good diagnostic character in *Lampribis*, and not dependent upon age, is well shown by the downy young of *L. akeleyorum*, for the shape of the naked patches, only a few days after hatching, is exactly the same as that of their parents.

* Bull. Brit. Orn. Cl. xl. 1919, p. 5.

† Bull. Amer. Mus. Nat. Hist. xxxi. 1912, p. 235.

XXXIV.—*An account of the Birds met with during a two months' shooting trip in Northern Rhodesia.* By Colonel STEPHENSON R. CLARKE, C.B., M.B.O.U.

(Plate VII.)

IN the following pages I endeavour to give a short and, I fear, a superficial account of the birds observed while making a two months' shooting trip during August and September 1920, in north-western Rhodesia. I had meant to have collected birdskins more seriously, but I met with two unexpected mischances; in the first place, it was not found possible to secure the services of a trained bird-skinner, and, in addition, I injured my right arm the second day out from Monze, and was unable to use my shot-gun for a month after.

My son Edmund accompanied me, and we engaged as guide and hunter Mr. F. Cooper, of Mazabuka. On our way north my son and I broke our journey from Capetown, in the Free State, to shoot specimens of the Black Wildebeeste and Blesbok; during the few days spent there we motored from Winburg to the Hoopstad district and back by a different road, something over 100 miles each way. I felt a natural pleasure in renewing acquaintance with the birds of the Free State veld after twenty years' absence: the small number of Raptores seen (even allowing for the fact of it being the winter) seemed to show a great diminution in their numbers since then: *Tinnunculus rupicoloides* is still abundant, but the only other members of the group seen in these two long drives were two Secretary Birds and one Black-shouldered Kite, nor did we see any of the Francolins, I had certainly expected to see *Francolinus gariensis*. On the other hand, White-quilled Knorhaan (*Otis afroides*), Namaqua Sandgrouse (*Pteroclorus namaqua*), Two-banded Courser (*Rhinoptilus africanus*), Burchell's Courser (*Cursorius rufus*), and the Kiewitjes (*Stephanibyx coronata*) were abundant, and I also saw several Blue Knorhaan (*Otis caerulescens*) in twos and threes, and, unless I was mistaken, many flocks of the

Black Finch-Lark (*Pyrrhuloxia australis*). I had met with each of these two last-named species on only one occasion, when collecting carefully during eight months in the Bloemfontein district. After this short expedition we again took the train for Rhodesia; soon after leaving Mafeking the railway-line enters very loose bush-veld, and though I believe we passed through one or two patches of open country in the night before reaching Monze, it was, as far as we saw, bush-veld, more or less dense, over practically the whole of the 700 miles of the eastern fringe of the Kalahari and the parts of western Rhodesia traversed in our railway journey to Monze, which is situated in long. 27° E., lat. $16^{\circ} 50'$ S.

We reached our destination on the 2nd of August about 10 in the morning, the frost of the night had disappeared, and we found our tents and two wagons waiting ready for us. We trekked at once and crossed a rolling open country with grazing grass, now dry from the winter's sunshine and drought, to the first water some seven miles west. Livingstone's Chat (*Saxicola pileata livingstonii*) and a Drongo (*Dicrurus adsimilis*) were seen on the plain, and near the water Doves and Swainson's Francolin (*Pternistes swainsoni*). The next morning we pushed on, the rolling grass-veld was left behind, and we entered a country of bush more or less dense interspersed with glades of open country, which, except on the flats by the Kafue River, were never of great extent. This country is, without being absolutely flat, very level, and dongas and streams few and far between. I was informed that the summer rainfall is very heavy, as much as 30 inches of rain falling in January and February; and, there being little surface drainage to carry off the water, the country during the summer months is waterlogged, and this probably accounts for the scarcity of Larks. Of these we only identified one species (*Tephrocorys saturator*); of Pipits one (*Anthus sordidus nyassæ*); also one *Macronyx*, the beautiful *M. wintoni*, which so far as we observed was confined to the flats by the Kafue River. Bustards were also scarce, and we only killed *Otis melanogaster*; of Francolins,

F. swainsoni was the commonest, and frequented the gardens of the natives. I also saw a fair number of *Pternistes cranchi*, which appeared to keep to thick bush by water, and not to use the cultivated land; I was surprised to find the range of this species extended so far to the south-west of where I last saw it in the Nyando Valley, British East Africa. There were also a few true Francolins of one or perhaps two species found sparingly in the larger patches of thick bush and on the top of a kopje near the Nasenga River, but we did not obtain any specimens. No Ostrich is found in north-west Rhodesia.

Another family that was notably poorly represented for Africa was that of the true Shrikes. I did not see a single *Lanius* or *Fiscus*; on the other hand, in most places *Urolestes* was abundant, and *Talaroma poliocephala* often seen in small flocks. The latter were very wary and none were shot by us; but one day, while tracking an Eland, I saw a small bird struggling in the grass at the foot of a tree, and thought that it had noosed itself, while Cooper, our hunter, thought that a snake had caught it; we went to it and found two of the Helmet-Shrikes fighting. When we were quite near to them they disengaged themselves and flew to the branch of a tree close above our heads, a third bird joined them, then the original two resumed their fight, and locked together fell to the ground near my gunbearer, who killed them both with a tap from my walking-stick. The wildness mentioned above was not confined to the Helmet-Shrikes, all the small birds in the plains and bush were extraordinarily difficult to get near, and as the larger waders, geese and other birds along the river were more approachable than usual, I attribute it to the annual burning of the grass, which in August is just finishing. The heavy summer rainfall and the hot sun produce a very strong growth of grass that in places attains a height above the head of a man riding, though generally only reaching to the knee. The Mashakalumbwe, who inhabit this district, as soon as the grass is dry enough, burn it in strips and patches, and with spears and dogs kill all they can of the animals hiding in it. Since the arrival of white

men in Rhodesia they have been able to cross the native curs with greyhounds, and their dogs nowadays are fast, and with their assistance they kill, besides many of the smaller buck, such as Oribi, the young of the largest antelopes, and probably do a great deal towards reducing the numbers of the big buck. There are still, however, plenty left for sport of most of the species of the latter that were originally found in the country—the Roan, which appears to like sour veld, and the Eland, which subsist largely by browsing, are the most generally distributed; while the Kudu, which desire thick covert to hide in, and the Sable, which seem to prefer light soil with short sweet grass and open park-like country shaded by large trees, are much more locally distributed. Our camps until we crossed the Kafue were generally pitched by a pan of water near to spots where there was a chance of finding one or both of these two antelopes.

These pans were sometimes deep enough to hold water permanently through the dry season, but generally they represented the last of the summer floods now drying up, often grass grew all over them, and until one waded in and parted the grass stems by one's hands, the water did not show: still, if care was taken to fill drinking-water vessels well away from the bank, the water was generally perfectly sweet and good, but twice in the Kafue Flats we got to bad water; the first time we attributed the cause to a peaty soil, and on the second occasion to the hundreds, perhaps thousands, of Spurwing Geese that came to this pan every evening. At the deeper pans there were the usual number of thirsty land-birds congregated to drink, especially Doves, and at the largest of them were several Darters and a pair of very tame Fishing Eagles (*Haliaeetus vocifer*), but the shallow pans were tenanted by wading- and water-birds in addition: generally there was a pair of Saddle-billed Storks (*Ephippiorhynchus senegalensis*), a flock of Open-bills, Crowned Cranes, and other wading birds; among them I was interested to see the Common Sandpiper, and obtained a specimen on the 15th of August. A fortnight later, on the banks of the Kafue River, I saw Greenshanks. I am quite sure that the

Sandpipers were on their return migration. I have always previously seen this species in Africa on the banks of rapid rivers similar to its breeding-haunts at home, but these birds were by stagnant pools and doubtless merely breaking their journey.

Among the remarkable features of the country are the anthills, their numbers are extraordinary, and their size at times prodigious; they are reported to be largest on good soil, and sometimes are nearly as big as wheat stacks. In some parts of the open bush all the trees and shrubs grow on anthills, the ground between being covered with grass or at times sour and bare; the size of some of the trees growing on the anthills indicates that the latter when very large are of immense age. It is possible that the heavy summer rainfall is the cause of the bushes growing only on the anthills in these spots, or it may be that animals do not destroy the seedlings on them; if it were not for their presence much more of the country apparently would be open grass plains, therefore the anthills would seem to have a very important effect on the distribution of the birds. The usual shape of these great anthills in the bush was similar to the small ones at home, but on the flats by the Kafue River, where they occurred, they were generally cone-shaped with sides so steep that they were difficult to climb.

We spent our first month, excepting two days when we crossed a part of the river flats, in the country described above; there were plenty of birds which, if often unobtainable, were of interest—the Grey Lourie (*Schizorhis concolor*) and two or three species of Hornbill were very conspicuous, as well as *Coracias caudatus*. I kept a sharp look-out for *C. spatulatus*, but we did not meet with it, and I only saw one specimen of *Merops nubicoides*, which was flying at a considerable height; a race of *Melittophagus pusillus* and *M. bullockoides* were the only other Bee-eaters I identified. Woodpeckers were not often met with: I saw and heard one making a drum-call on a dead tree like our Spotted Woodpeckers do at home, but the note was far more powerful; unluckily I was unable to determine the species, possibly it was *Thripas*

namaquus, of which we shot one specimen. There were a good many Vultures about our camps, and their numbers increased as we approached the Kafue.

My son killed a lioness one evening not far from our tents, and had her gralloched, intending to have her carried into camp to be skinned by the fire; she proved to be too heavy to carry, so she was skinned where she fell; that night two lions, probably looking for her, roared round camp till just before daylight. The next morning we rode out in different directions, but though out for four hours not a head of game could we see; we concluded the noise made by the lions had shifted the bucks. On my way back to camp I thought that I would visit the carcase of the lioness to see if anything had been to it; both the carcase and the gralloch lay untouched, and in the grass around them and perched on trees above were some forty vultures, apparently *Pseudogyps africanus*. I offer no comment as to whether vultures recognize lion's flesh, but I am sure that if the body (to say nothing of the entrails) had been that of a fair-sized buck, the party I saw would have started to eat it at once, and that all would have been finished in twenty minutes. Before this episode I had seen three carcasses of lions left untouched by vultures though they had been killed two or three days previously, but at that time in that country (the Loietai plains, B. E. A.) vultures were not so plentiful as they were on the Kafue, and the herds of buck were far more numerous.

Besides the Fishing Eagles the Bateleur was common, and a specimen or two with apparently a light grey back were seen but not obtained. Two or three times eagles were seen to strike at birds: I saw, I believe, a *Circuëtus* make a stoop at a *Pternistes* standing on a bare patch of ground; the latter escaped by springing into the air at the last moment. I have seen Ptarmigan in Scotland evade the Golden Eagle in the same way. A Darter attacked by a Fishing Eagle tumbled headlong into the water; and a Marsh-Owl (*Asio capensis*) that I had marked down and was dismounting to shoot was swooped at by a small dark eagle—the owl mounted

in a narrow spiral, and a splendid flight ensued ; a second eagle joined the chase, and the three birds circled upwards till all were lost to view, and I can give no idea as to the result, but the powers of flight of the owl surprised me.

Two specimens of *Scops capensis* were secured with one shot while seated side by side in a " German-sausage " tree, at the crimson flowers of which numbers of *Cinnyris gutturalis* in full plumage were feeding ; one *Bubo verreauxi* was obtained. I saw one morning a small blue-grey Falcon chasing a little bird, which it pursued like our Merlin, and it seemed to be at least as quick on the wing. The next day my son brought to me a Dickinson's Kestrel (*Dissodectes dickinsoni*), which he shot when coming to drink at a pan ; I believe this was the species I had seen the day previously, and I would humbly suggest that this bird, with its powerful legs and claws, should not be accounted a Kestrel. In some places Guinea Fowl (*Numida mitrata*) were abundant in good-sized flocks, their habits similar to other species of their genus, but their flesh was below the usual excellent quality of their race.

Just before reaching the Kafue River we crossed a low ridge of sandy soil. The Mashakalumbwe like such sites for their villages, and this was thickly populated, no bush had been left, but here and there a few great trees ; in the branches of one which bore an olive-like fruit, were a large flock of green pigeons, one was shot and proved to be *Vinago wakefieldii schalowi*. On a tree further on my son saw a bird with a white head and breast ; this was obtained, and was found to be the Barbet now named *Lybius chaplini* (Pl. VII. fig. 3). An hour later we reached the river, and from its bank enjoyed the spectacle of numberless birds feeding or flying to their roosting grounds. The ford was 150 yards wide, and the banks of the river, except where rocks raised grey masses above them, were lined with a narrow edging of green reeds, with sharp-pointed leaves ; two or three islands of sand divided the river's surface, and birds were everywhere—Scissor-bills flew to and fro, Great White Egrets waded in the shallow water, the rocks carried black flocks of two

species of Cormorant, Senegal and Spurwing Plovers and Greenshanks and Lily-Trotters thronged the sandy islands, a ceaseless stream of Spurwing Geese and Open-bills passed overhead, and the smooth surface of the river near the fringe of reeds was continually broken by the splashes of diving Kingfishers.

It was a delightful scene—an evening to be remembered. We shot a few herons and plovers, and then lay on the ground, the silence broken by the rippling of the clear river below us, the plop-plop of rising fish, and now and again the wild whistle of Fishing Eagles (*Haliaëtus vocifer*). We looked beyond the river at a fresh country; by the track we had come the slightly rolling veld had continued to the actual bank of the stream, but on the north side the river held in domination a wide tract of country; grassy flats intersected by lagoons and reed-beds extended beyond our range of sight, and promised a rich reward for several days' investigation. Unfortunately, the Lechwe and Puku we were seeking were not so abundant as we had expected, and after a couple of days spent among these delights of marsh-birds, we left for the thicker bush near the Nasenga River.

During these days we saw vast numbers of Spurwing Geese, and found them easy of approach. One party came to bathe in the river 50 yards away from our tents and paid a toll towards our food supply. I crawled up to another lot of about fifteen, and shot one with my Mauser; they were so slow at rising that I was able to pump up another cartridge and kill a second before it was on the wing. Other large birds were Crowned Cranes (*Balearica regulorum*), and another Crane which we thought to be the Stanley, but though we saw two or three pairs we were not able to secure a specimen; the Goliath Heron and the Saddle-billed Stork were also seen, and we killed one of each. There were a few flocks of Whydahs and Bishop-birds about the reeds, unfortunately the species were not identified; and I saw one Quail, but generally speaking small birds were not very abundant. Further on, beyond the country of lagoon and reed beds, we found large grassy flats which appeared to be

regularly flooded every rainy season, and here we saw the Red-cap Lark (*Tephrocorys saturator*), *Macronyx wintoni*, and flocks of the Grey-rumped Swallow (*Hirundo griseopyga*), and occasionally the Pratincole (*Glareola pratincola*) flitted over them. We spent two nights by a shallow pan at the far edge of the flats; this was the resort every evening of a countless number of Spurwing Geese, their flocks arriving at sunset in a continuous stream.

Except where nature had cleared the ground, we found the bush near the Nasenga River somewhat denser than any we had seen before, the flat country ended, and there were a good many kopjes and ridges flanking the river, the bush continuing over the sides and top of these. The Nasenga River itself is only a few feet across, but generally deeper than a man's height; here were a number of birds that we had not seen before. The first day we drove the banks of the river for bush-buck, and my first shot was at a huge Pel's Fishing Owl, which fell and hung in a thick mimosa tree on the far bank; the beaters on that side were all Mashakalumbwe, and when they saw the dead owl they thought it to be a leopard. Being ignorant of their language I could not explain matters to them, and so I had the painful experience of witnessing a Mauser bullet and two charges of buckshot poured into my owl, before any one would go near it.

Other interesting birds obtained during these beats were *Turacus schalowi murungensis*, Darters (*Anhinga rufa*), Green-backed Heron (*Butorides atricapilla*), Hah-de-dah (*Hagedashia hagedash*), *Pternistes cranchi*, a Stonechat, the skin of which was unfortunately spoilt, and *Halcyon orientalis*; the big Kingfisher (*Ceryle maxima*) was often seen but never shot at.

Having obtained specimens of Kudu and Crawshay's Waterbuck, we started on our homeward journey. It was now mid-September, and the weather was perceptibly warmer, though no rain had fallen since we started, the mimosas and other trees were getting green with their young leaves, here and there a tree showed among the rest scarlet

from the flowers of a creeper; others were delicate pink or orange-yellow with their own blossom, and a species of *Erythrina* carried horse-chestnut shaped panicles of crimson that had opened before its leaf-buds had burst. The only incident that I recollect of ornithological interest was passing some large flocks of, I believe, a third species of Crane; they were feeding on damp flats not far from the Kafue, and I failed to get within effective rifle range.

I have appended a list of the birdskins and birds preserved with formalin that we brought home with us, and which I have presented to the British Museum. This list was kindly prepared for me by Mr. Thomas Wells, to whom I return my grateful thanks.

Among the birds only one appears to be new. This is *Lybius chaplini*, named after Sir Drummond Chaplin, the Administrator of Southern Rhodesia. It is described in the Bull.B.O.C. (vol. xli. p. 50, Dec. 1920), and is figured (Plate VII.) together with what appear to be its two nearest allies, *Lybius leucocephalus* (Fil.), from the Egyptian Sudan and Uganda, and *L. rubrifacies* (Reichw.) also from Uganda.

List of Birdskins and Birds preserved in formalin, brought back from Northern Rhodesia and presented to the British Museum.

<i>Pternistes swainsoni</i> .	<i>Butorides atricapilla</i> .
„ <i>cranchi</i> .	<i>Bubulcus ibis</i> .
<i>Numida coronata mitrata</i> .	<i>Hagedashia hagedash</i> .
<i>Pterocles gutturalis saturator</i> .	<i>Anastomus lamelligerus</i> .
<i>Vinago wakefieldi schalowi</i> .	<i>Ephippiorhynchus senegalensis</i> .
<i>Chalcopelia c. caffra</i> .	<i>Plectropterus gambensis</i> .
<i>Rhynchops flavirostris</i> .	<i>Phalacrocorax africanus</i> .
<i>Ochthodromus asiaticus</i> .	<i>Anhinga rufa</i> .
<i>Actophilus africanus</i> .	<i>Neophron pileatus</i> .
<i>Glareola pratincola fulleborni</i> .	<i>Pseudogyps africanus</i> .
<i>Rhinoptilus chalcopterus</i> .	<i>Melierax gabar</i> .
<i>Cursorius temminckii</i> .	<i>Astur badius polyzonoides</i> .
<i>Otis melanogaster</i> .	<i>Helotarsus ecaudatus</i> .
<i>Balearica regulorum</i> .	<i>Milvus migrans parasitus</i> .
<i>Ardea goliath</i> .	<i>Falco dickinsoni</i> .
<i>Nycticorax nycticorax</i> .	<i>Scops capensis</i> .
<i>Erythrocnus rufiventris</i> .	<i>Scotopelia peli</i> .

<i>Bubo lacteus.</i>	<i>Thamnodæa nigra.</i>
<i>Asio capensis.</i>	<i>Cisticola n. natalensis.</i>
<i>Haleyon orientalis.</i>	„ <i>ruficapilla.</i>
<i>Corythornis cyanostigma.</i>	„ <i>fulvifrons.</i>
<i>Bucorax cafer.</i>	<i>Euprinodes flavocincta.</i>
<i>Melittophagus bullockoides.</i>	<i>Sylviella rufescens.</i>
„ <i>pusillus cyano-</i>	<i>Laniarius æthiopicus mossam-</i>
„ <i>stictus.</i>	<i>bicus.</i>
<i>Tachornis parva.</i>	<i>Prionops poliocephala.</i>
<i>Turacus schalowi marungensis.</i>	<i>Batis puella.</i>
<i>Schizorhis concolor.</i>	<i>Nilaus afer nigritemporalis.</i>
<i>Centropus monachus.</i>	<i>Urolestes melanoleucus.</i>
„ <i>s. senegalensis.</i>	<i>Melaniparus niger niger.</i>
<i>Indicator indicator.</i>	<i>Lagonosticta sengalla rendalli.</i>
<i>Lybius chaplini.</i>	„ <i>niveiguttata.</i>
<i>Melanobucco torquatus.</i>	<i>Pyromelana xanthomelæna.</i>
<i>Pogoniulus chrysæon</i>	<i>Vidua serena.</i>
„ <i>rhodesiæ.</i>	<i>Estrilda angolensis.</i>
<i>Caprimulgus fossei.</i>	<i>Anaplectes rubriceps.</i>
<i>Thripias namaquus.</i>	<i>Sitagra ocularia.</i>
<i>Hirundo semirufa.</i>	<i>Serinus icterus.</i>
„ <i>s. monteiri.</i>	<i>Tephrocorys saturator.</i>
„ <i>griseopyga.</i>	<i>Anthus sordidus nyassæ.</i>
<i>Grauculus pectoralis.</i>	<i>Macronyx wintoni.</i>
<i>Pycnonotus tricolor micrus.</i>	<i>Lamprocolius sycobius.</i>
<i>Crateropus hartlaubi.</i>	<i>Dicrurus adsimilis.</i>
<i>Saxicola sp.</i>	<i>Cinnyris æquatorialis.</i>
<i>Campicola pileata.</i>	„ <i>leucogaster.</i>

XXXV.—*Notes on some Birds from the Near East and from Tropical East Africa.* By Colonel R. MEINERTZHAGEN, D.S.O., F.Z.S., M.B.O.U.

(Text-figure 4.)

THE following notes have been compiled during the working out of my collections from Palestine, Syria, Egypt, and East Africa, and only those species are mentioned about which something of interest or something new has been noted.

I was in East Africa during the first two years of the war, and Mr. A. Turner continued to collect for me after I left the country, his main effort being directed towards migratory

species or geographical races of birds which occur within the Palearctic Region. I was in Palestine during nearly the whole of 1917, but the war prevented anything but a small representative collection being made, the results of which have been already published in 'The Ibis' of January 1920. I returned to the Near East in August 1919 and remained there till August 1920. During that period I spent about half my time in Syria and Palestine and half in Egypt, visiting Aleppo, Damascus, the Syrian Desert, Lebanon, Beyrouth, and the Jordan Valley, also Sollum and the Siwa Oasis in the western Desert of Egypt. I traversed the desert between Suez and Cairo twice, I visited the Fayoum twice, and the Wadi Hof near Helouan on several occasions. I finally spent a month in Crete.

Collecting was carried on everywhere and under all conditions. Powell, who did all my skinning, was at times hard-worked. On one occasion I returned to Damascus from the Syrian Desert with an Eagle-Owl, a Rock-Pigeon, three Chukar, and eleven smaller birds. Powell had the lot skinned and made up into first-class skins in six hours. Again, in the Jordan Valley (notwithstanding the sweltering heat and myriads of mosquitos) I returned with two Stone-Curlew, two Kestrel, two Little Owls, three Chukar, three Starlings, and a Dotterel. All were done that evening.

I have again to thank my friend Mr. M. J. Nicoll for so kindly housing my collections in Cairo and helping me with advice; and to Lord Rothschild and Dr. Hartert I again offer my sincerest thanks for the assistance afforded me in working out my collections at Tring. Finally, I have to thank Sir Geoffrey Archer for allowing me to look through his collection of Somaliland birds.

Wing measurements are taken flat and fully extended. Culmen measurements are those of the upper mandible from its junction with the skull, unless otherwise mentioned. All measurements are given in millimetres.

Throughout this paper the name Kenya Colony is used for British East Africa, and the name Tanganyika Territory is used for German East Africa.

Corvus corax ruficollis Lesson.

Corvus ruficollis Lesson, 1831 : no locality.

Corvus umbrinus Sundevall, 1838 : Senaar.

Corvus infumatus Wagner, Münch. gel. Anz. viii. 1839, p. 301 : Arabia Petræa, Egypt, and Dongola.

Corvus corax krausei Zedlitz, Orn. Monats. 1908, p. 178 : N.E. Africa, probably Suez, and El Tor in Sinai.

I have not been able to examine the type of *infumatus* which is in Munich, but I am told the specimen resembles typical *ruficollis* but has a more slender bill. The type of *ruficollis* probably came from the Cape Verde Islands (*cf.* Hartert, Nov. Zool. 1913, p. 37). As regards *krausei*, the race is based on four birds from Sinai which have black plumage with a poor gloss as opposed to the coppery plumage of *ruficollis*. They are also said to have very slender bills. As regards the black plumage, I believe these four birds are nothing more than immature *ruficollis*, which do not assume the coppery plumage till the first moult. This has already been pointed out by Hartert, and I can confirm it from birds shot in north Sinai in early autumn. But Geyr (J. f. O. 1918, p. 145) disagrees, and finds that birds of eight or ten months show a certain amount of brown on the head, neck, and back.

Now, as Suez is said to be one of the localities from which *krausei* comes, I would point out that I recently saw some thirty Ravens at Suez, and could see through my glasses that every bird was typical *ruficollis* as regards plumage. This was in April. There is an adult bird from Suez in the British Museum which in colour differs in no way from the birds from Egypt, India, or other localities.

The wing of *krausei* is also said to be small. Now the only Sinai bird with an exceptionally small wing is one in the Brehm Collection at Tring, labelled "Arabia Petræa," an adult male. The specimen has a much worn wing, not exceeding 350 mm., and a culmen 65 mm. long and 25 mm. high. By comparing the date on which the bird was shot with Brehm's Reiseskizzen, it must have been obtained near

El Tor. The bird is not black as *krausei* should be, but has the coppery plumage of *ruficollis*.

As regards other Sinai birds, through the kindness of Professor Koenig, who has a series from Sinai, I am able to give the following measurements:—

Wing 350–378; culmen, length 57·5–62·5, height 21–22·5.

Zedlitz (J. f. O. 1912) gives the following measurements for his series of *krausei* from Sinai:—

Wing 355–375; culmen, length 58–64, height 21–23.

Two birds from Nekhl (central Sinai) in the Giza Zoological Museum measure: wing 387–405; culmen, length 59–63, height 23; whilst a female in Koenig's collection from Sinai has a wing of 385 mm. (J. f. O. 1918, p. 147).

So Sinai birds have a wing varying from 350–405, and a culmen whose length is from 57·5 to 65 mm. and height from 21 to 25 mm.

Now from the series in the British Museum, Tring Museum, Giza Zoological Museum, and in my own collection, I have obtained the following measurements:—

Number of birds examined.	Locality.	Wing.	Culmen.	
			Length.	Height.
15	Cape Verde Islands	363–378	61–64	20–24
6	Algeria	366–389	63–68	21–24·5
15	S. Algeria (Geyr)	356–410	57–69	20–25
1	Nigeria	384	64	22
2	Siwa Oasis, W. Egypt ...	395, 406	66, 70	23, 24·5
6	Lower Egypt and Suez .	368–420	61–73	20–24
9	Upper Egypt.....	365–418	64–73	21·5–25
3	Khartoum	373–412	67–69	20–23
4	Sokotra	350–395	63–75	24–25
11	South Palestine	366–412	61–68	21–24
10	E. Persia and India	370–413	62–70	21–25·5
6	S. Arabia and Muscat ...	355–401	60–65	20–24
—	—	—	—	—
88		350–420	57–75	20–25·5

On these measurements I am unable to substantiate *krausei* or *infumatus*, and therefore shall treat them as synonyms of *ruficollis*.

I also find that *ruficollis* shows great variation, not only in size but in the amount and density of the coppery plumage, especially on the nape and mantle, and that this variation is not constant within a definite area.

Distribution.—(Near East.) Breeds in southern Palestine south of a line Gaza, Hebron, north to Jerusalem and east to Jericho and a few miles north. North of this line occurs *laurencei*. In winter I have seen many of the latter at Jerusalem and on the Jerusalem-Hebron road, but never in the Jordan Valley or on the eastern slopes of the southern Judæan hills. Also I have never at any season seen *ruficollis* north of their breeding area. They apparently breed in the hills throughout Sinai and near Suez on both sides of the Gulf of Suez. They breed in the Egyptian Desert fringing the Delta, but do not occur in the Delta.

West of Alexandria their place is taken at Sollum by *Corvus c. tingitanus*. At Siwa Oasis, south of Sollum, *ruficollis* is resident and common.

Fresh eggs taken in Palestine from 15.iii. to 17.iii.

CORVUS CORNIX.

I have examined the following birds :—

North-West Europe.

61 from Great Britain, Faroe Islands, Finland, Sweden, northern and central Russia, and Germany.

♂. Wing 316-340; culmen, length 49-60, height 19·5-22.

♀. Wing 305-331; culmen, length 49-54, height 19-21.

Hartert (Vög. pal. Fauna) gives wings of such birds as 320-340 mm., and Stresemann (Avif. Macedon.) as 305-338 mm.

Balkans.

3 birds from Rumania.

2♂. Wing 311, 320; culmen, length 57·5 and 58, height 20, 22.

1♀. Wing 316; culmen, length 59, height 20.

Parrot gives the wings of two Greek birds as ♂ 309 and ♀ 294 mm.

Stresemann gives four males from Macedonia (mainly from Serbia) as 280–308 in wing, and three females from 288 to 306 mm.

Stresemann gives the wings of three males from Rumania as from 308 to 333, and of five females as from 291 to 303.

Palestine.

6 ♂. Wing 292–312; culmen, length 51–56, height 18–20·5.

8 ♀. Wing 278–301; culmen, length 45–53, height 17–19.

Gengler (J. f. O. 1919, p. 221) gives the wings of three Jerusalem birds as 300–324 and culmen length as 42–51.

Two Urfa (N.W. Mesopotamia) birds (*teste* Stresemann, Avif. Macedon.) have wings of 309 and 311.

Stresemann (*ibid.*) gives the wing of four birds from Vladikavkas (N. Caucasus) as 304–319 and one from the Crimea as 301 mm.

Egypt.

20 ♂. Wing 286–324, 331; culmen, length 50–58, height 17·5–20.

15 ♀. Wing 286–317; culmen, length 45–54, height 17·5–20.

Sardinia and Corsica.

Probably all males.

Wing 306–329; culmen, length 54–57, height 17·5–20.

Now in fresh autumn plumage (the only test for birds which bleach and wear like the Hooded Crow) I can detect absolutely no difference in the colour of the plumage between birds from all the above localities, though there is an infinitesimal individual variation which is never constant within a given area. I am unable to follow Gengler in his Review of the Corvidæ (J. f. O. 1919, p. 215) and do not find that the characters he gives to *subcornix*, *kaukasicus*, and *syriacus* hold good among fresh autumn birds.

But in winter and breeding plumage, birds appear to bleach in accordance with external conditions. In Palestine, for instance, and especially in the Jordan Valley, by January

birds are brown and not grey on the back, whereas birds from northern Europe have scarcely changed at all. In Egypt, I shot many dozen Hooded Crows from April to July, and found that by the latter month adults were as brown as Palestine birds and were indistinguishable from them.

On colour alone I therefore unite all these birds. But in size one finds that birds from northern, western, and central Europe are larger than those from the Balkans, Sardinia, Corsica, Palestine, and Egypt. I deal with birds from Crete and Cyprus later on, as they differ in plumage-colour and constitute a paler race.

The larger northern race is, of course,

***Corvus cornix cornix* L.**

♂. Wing 316–340; culmen, length 49–60, height 19·5–22.

♀. Wing 305–331; culmen, length 49–54, height 19–21.

The small southern race becomes

***Corvus cornix sardonius* Kleinschm., 1903.**

Corvus aegyptiaca Brehm, 1853, nom. nud.: Egypt.

C. c. sardonius Kleinschm., 1903: Sardinia.

C. c. valachus Tschusi, 1904: Rumania.

C. c. balcanicus Rzehak, 1906: Balkans.

? *C. c. kaukasicus* Gengler, 1919: Caucasus.

C. c. syriacus Gengler, 1919: Jerusalem.

C. c. judæus Meinertzhagen, 1919: S. Palestine.

♂. Wing 280–324*; culmen, length 50–59, height 16·5–22.

♀. Wing 278–317; culmen, length 42–59, height 17–20.

Now birds from Cyprus appear to agree well with *C. c. sardonius* in size, but are paler, which colour is quite distinct in fresh autumn plumage. Four birds have measurements as follows:—

1 ♂. Wing 292; culmen, length 55, height 20.

3 ♀. Wing 295–298; culmen, length 48–53, height 17–20.

Stresemann (Avif. Macedon.) gives the wings of two Cyprus birds as 285–289, whilst Madarasz gives the wings of eleven birds as 288–313.

* Once 331 (Egypt) and once 333 (Rumania).

It is curious that Stresemann (Avif. Macedon.) should have recognized the small southern race of the Hooded Crow as coming from the Balkans to Syria, Palestine, and Egypt, but should have united them with the Cyprus bird under the name *Corvus corone pallescens* (Mad.). In fresh autumn plumage the Cyprus bird is much paler than birds from the Balkans, Syria, Palestine, and Egypt (and Sardinia), and must be recognized as a geographical race under the name

***Corvus cornix pallescens* (Mad.).**

Cretan birds appear similar to those from Cyprus in colour but are much larger, resembling more *Corvus cornix cornix* in size :

4 ♂. Wing 316–327; culmen, length 55–61, height 20–22;

1 ♀. Wing 313; culmen, length 56, height 20;

and I have already described this bird as

***Corvus cornix minos* Meinertz. Bull. B. O. C. xli. 1920, p. 19.**

In conclusion I recognize the following races of Hooded Crow :—

Corvus cornix cornix L.—Large and dark. Northern, western, and central Europe.

Corvus cornix sardonius Kleinschm.—Small and dark. Sardinia, Corsica, probably Sicily, Balkans, probably Asia Minor, Syria*, Palestine, and Egypt†.

* In Syria the Hooded Crow is a common resident at Aleppo, Damascus, and Baalbek, but not in the Lebanon or Syrian Desert. On the coast they do not seem to occur north of Sidon or south and west of Khan Yunus (near Gaza). They are absent from Galilee, the Yarmuk Valley, and the northern Jordan Valley. Not seen south of Hebron. Common in coastal Palestine, the Judæan highlands north to Nablus, and in the Lower Jordan Valley near Jericho. Apparently common in Transjordan and on the Moab Plateau. (Tristram, Survey of Palestine.)

† In Egypt the Hooded Crow is confined to the Delta, and not to all of that. Absent from the Suez Canal throughout its length, and does not seem to occur much east of Tel-el-Kebir. In the western Delta they are gradually extending their range towards Alexandria, but so far have not reached that place by a few miles. The southern limit up the Nile is not yet known for certain, but they certainly occur as far south as Assuan.

Corvus cornix pallescens (Mad.).—Small and pale. Cyprus.

Corvus cornix minos Meinertz.—Medium and pale. Crete.

Corvus cornix sharpii Oates.—Large and pale. Western Asia.

Corvus cornix capellanus Sel.—Very large and very pale. Persian Gulf.

PASSER DOMESTICUS.

I collected large series of Sparrows at all seasons from Damascus, throughout Palestine, and in Egypt.

Passer domesticus biblicus Hartert.

Adult male in fresh autumn plumage has the back, primaries, and tail paler than in *P. d. domesticus*, the crown browner, not so bluish. Ear-coverts grey as in *P. d. domesticus*. Rump similarly coloured to the head, whereas in the typical race the head is greyer than the rump. In spring plumage the adult male more closely resembles the typical race, but the back, head, and rump are paler.

Two birds in the Tring Collection, labelled respectively Syria and Palestine, appear to more closely resemble *indicus* in the colour of the ear-coverts, which are almost pure white, but their wings—79 and 80 mm.—are nearer *biblicus*. Birds from Eregli (S.E. Asia Minor) are similarly coloured and tend towards *indicus*. Birds from Cyprus (five examined) appear to be typical *biblicus*. Wings of five males 76–81 mm.

Palestine and Syrian birds measure :—

26 ♂. Wing 77, 79–83 mm.

4 ♀. Wing 78–81 mm.

The culmen of *biblicus* is as in the typical race.

This race occurs in Syria and Palestine, at least from Damascus and Beyrouth south to Beersheba, throughout Palestine and the Jordan Valley to the Sinai Peninsula. Also in Cyprus. Birds from Suez and the Suez Canal are *niloticus*.

A male shot on 3.iii. in the Upper Jordan Valley, with a wing of 80 mm., has a chocolate head and the back of *Passer hispaniolensis*, and is apparently a hybrid between *P. d. biblicus* and *P. h. transcaspicus*.

***Passer domesticus niloticus*.**

Passer d. niloticus Nicoll & Bonhote, Bull. B. O. C. xxii. 1909, p. 101 : Fayoum.

Passer alexandrinus Madarasz, Ann. Mus. Nat. Hist. Hung. ix. 1911, p. 340 : Alexandria.

Passer d. chephreni Phillips, Proc. Biol. Soc. Wash. 1913, p. 167 : Giza, near Cairo.

Much smaller than *biblicus* in both wing and culmen. The sides of the head are whiter than in *biblicus*, but the ear-coverts are grey and never white. Wing of nine males 71–75 mm., and of one female 73 mm. Two males from Alexandria run larger, having wings of 77 and 78 mm. Birds from El Arish in northern Sinai seem to be intermediate, four males having wings from 76 to 79 mm.

The common resident Sparrow of the Egyptian Delta from Alexandria to Cairo and up the Nile as far as at least Wasta and the Fayoum. Absent from Mersa Matruh and Sollum on the western Egyptian coast. No sparrows occur in the Siwa Oasis. Also common on the Suez Canal from Port Said to Suez.

***Passer domesticus halfæ*.**

Passer d. halfæ Meinertzhagen, Bull. B. O. C. xli. 1921, p. 67 : Wadi Halfa.

Very similar to *arboreus*, but slightly larger and less brightly coloured. Upper tail-coverts and rump pure smoky grey, whereas in *arboreus* these parts nearly always have a few feathers tipped with chestnut. The chestnut on the back is more confined and less intense. Differs from *indicus* in having the top of the head a paler brighter blue-grey and in being slightly smaller. Is at once distinguished from *niloticus* by the large extent of a brighter, purer chestnut on the back. Wing of five males 73 to 80 mm.

PASSER HISPANIOLENSIS.

Passer h. hispaniolensis (Temm.).

All Egyptian birds I have examined belong to the typical race, also January birds from Sollum. The Spanish Sparrow apparently used to breed in Egypt, but has long since ceased to do so. They arrive in immense flocks from the north from September onwards and spread all over the Delta, being as common in the Alexandria Docks as they are in the Fayoum or anywhere else in the Delta. They spread far down the Nile, reaching south to Merowe, creating havoc among the crops.

In spring they begin to leave in the middle of March, and a large flock was seen at the Delta Barrage as late as 11. iv.

Passer h. transcaspicus Tschusi.

The common race of Palestine and Syria, extending south in winter to central Sinai. The only breeding colonies I saw were at the north-west corner of the Sea of Galilee and in the Lower Jordan Valley, but the vast majority of winter birds are migrants, breeding birds being rare. Most of the winter visitors appear to have left Palestine by the middle of March. Not seen in Palestine outside the Jordan Valley and Sea of Galilee areas.

Passer italiae (Vieill.).

A typical specimen shot from a flock of Spanish Sparrows at Sollum on 21. i. was a male with a wing of 76 mm. This is the first Egyptian record.

Melanocorypha calandra hebraica.

Melanocorypha calandra hebraica Meinertz. Bull. B. O. C. xli. 1920, p. 21: Jenin in northern Palestine.

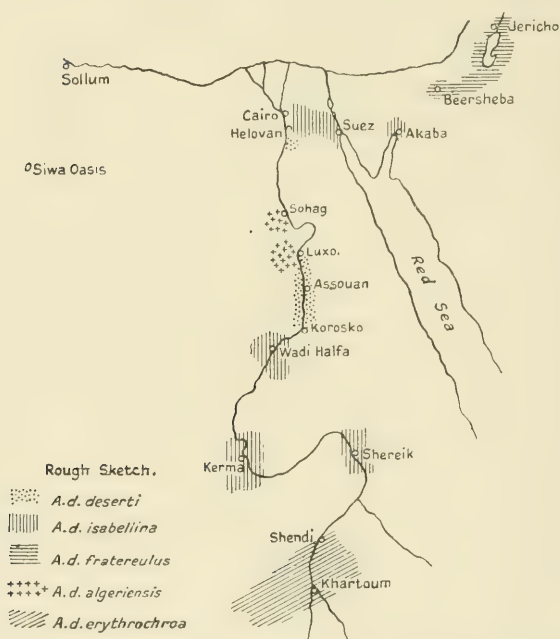
The common resident Calandra Lark of Syria and Palestine, breeding from Damascus and Baalbek to the Plain of Esdraelon in northern Palestine and throughout the coastal belt of that country. Not noted in the Judæan highlands or Jordan Valley.

***Ammomanes deserti* (Licht.).**

Ammomanes deserti deserti was originally described from "Ægypto super." and *A. d. isabellina* from "Asaba"—probably Akaba—in Sinai.

Birds from Cairo, Helouan, and Suez, from Wadi Halfa, Kerma (Dongola bend of the Nile), and Shereik are slightly paler than others from Assouan and Korosko. Nicoll even obtained a dark bird at Helouan and has others from Luxor.

Text-figure 4.



Sketch-map of Egypt to show the distribution of the races of
Ammomanes deserti.

These dark birds are undoubtedly *A. d. deserti*, whilst the paler ones are certainly *isabellina*. The two races are exceedingly close, differing only in a slight colour shade. I have not examined birds from Sinai nor the type of *isabellina*, so cannot say whether they differ from Nile

Valley birds. A specimen from Beersheba is however *fraterculus*, which agrees with the dark *A. d. deserti* in colour but has a much smaller culmen. *A. d. fraterculus* is also the Jordan Valley bird. To further complicate the problem, the pink *A. d. algeriensis* occurs on the west bank of the Nile about Sohag and Luxor. *A. d. erythrochroa* Rehw. occurs farther south on the Nile at Shendi and Khartoum, and is a redder, darker bird than any of the above. I have not seen examples of *katherine* Zedlitz from the Sinai Hills.

***Ammomanes phoenicura* (Frankl.).**

The problem of this species in northern Africa is no less perplexing.

An examination of the large series of *A. p. arenicola* from Algeria, Tunis, and Kerma (Dongola bend of the Nile), together with a series of nine birds I collected near Cairo, two from the Siwa Oasis, and one from Sollum, shows the following :—

- (a) December, January, and May birds from near Cairo and Sollum have the dark colour of *A. deserti deserti*. Wing 89–96.
- (b) Two January birds from Siwa Oasis have the pale colour with a pink tinge of *A. deserti algeriensis*. Wing 90.
- (c) Spring birds from Algeria have the pale colour of *A. deserti isabellina*. Wing 92–97.
- (d) Two birds from Kerma resemble, in the one case, shot on 25. ii., Cairo and Sollum birds, and in the other case, shot on 5. iii., Algerian birds.

The problem is this. Are all northern African birds the same, or are these three races, as in *A. deserti*, geographical forms worthy of separation? If they are the same race, but having the dark (*A. d. deserti*) colour in fresh autumn plumage, pink (*A. d. algeriensis*) colour in winter, and sandy isabelline (*A. d. isabellina*) colour in spring, then the three races of *Ammomanes deserti* are probably the same bird in different seasonal plumages. This latter does not seem to be the case, for all the *A. d. algeriensis* I have seen have in both spring and autumn the pink-tinged coloration.

If all the *Ammomanes phænicura* from northern Africa are not the same race, then the Algerian bird must be called *A. p. regulus* Bp. (1857: Algerian Sahara), the Cairo and Sollum birds remain *A. p. arenicolor*, and the Siwa birds must have a new name.

Now the fact that spring and autumn birds near Cairo show a constancy of the dark coloration, rather points to there being more than one race in northern Africa, but in the absence of autumn specimens from Algeria, I refrain from coming to any definite conclusion. I also recommend to my friend Nicoll a complete Ammomanian survey of the Nile from Khartoum to Cairo, once in autumn and once in spring, also a trip to the Sinai hills, where Zedlitz's *A. d. katharine* is said to occur.

GALERIDA CRISTATA.

The following are the results of my investigations into the Crested Larks of Syria, Palestine, Egypt, the Red Sea, Abyssinia, and Somaliland. In all, 383 birds were examined.

Galerida cristata nigricans Brehm.

43 examined from Helouan (April), Giza (Dec.), Delta Barrage (April and May), Inchas (Jan. and March), northern edge of the Delta (Jan. to April), central Delta (Feb. to May), Kantara on the Suez Canal (Dec.).

No freshly-moulted autumn birds examined.

This is the darkest race of the Crested Larks. Breast densely spotted with rich black spots which are never very clear-cut. Under parts invariably tinged with yellowish buff, distinctly more so than in *maculata* (= *altirostris* of Hartert's Vög. pal. Fauna). Upper parts very dark, the centres of the feathers being nearly coal-black. Crown much darker than in any other race. Outer tail-feathers with black extending over the whole of the inner web and over nearly half the outer web. Remainder of feather a rich buff. (I would mention here that among Crested Larks the colour on the outer tail-feather is a very unreliable characteristic.) Average wing for thirty-four males 101.9 mm. (max. 106, min. 99), and for nine females 96.1 mm. (max.

101, min. 93). Culmen of males 21–22 mm. and for females 20 mm.

This is the characteristic race of the core of the Egyptian Delta, its southern breeding-limit being about the line Delta Barrage–Caliub–Inchas, whence its range extends north-east and north-west almost to the sea-coast, but always keeping well within the Delta and not on the outskirts.

In winter they wander, when they have been obtained at Giza and Kantara. A bird of this race found breeding at Helouan is an exception.

Two breeding birds from near Benha, some 35 miles north of Cairo, are rather pale for typical *nigricans*, but are much too dark for *maculata*. During April, Nicoll and I motored from Cairo to Benha. About Caliub the birds rapidly changed from *maculata* to *nigricans*, and at Benha nearly every bird was typical *nigricans*.

***Galerida cristata maculata* Brehm, 1858.**

Galerida cristata altirostris Brehm (*cf.* Hartert, Nov. Zool. 1919, p. 36).

87 birds examined from Port Said and Kantara on the Suez Canal (Feb. and March), the northern edge of the Delta (Jan., Feb., June, Oct.), western edge of the Delta (Nov.), south-eastern edge of the Delta (April and June), Alexandria (Oct.), Caliub and Benha (April), near Cairo, Giza, Pyramids, etc. (Jan. to March, May, Aug. to Dec.), Helouan (March, April, Nov., Dec.), south of Helouan at Iyat, Wasta, Khizam, Kenah, Esna, Sohag, and Luxor (Jan. to March, Sept. to Dec.).

In fresh autumn plumage the breast-spotting is almost a smudge, the spotting only appearing fairly distinct after the feather edgings have worn off; but the spotting at all seasons is large and not clear-cut, and never so dense as in *nigricans*. Upper parts paler than in *nigricans*, with less and less intense black in the centre of the feathers. Crest without so much black as in *nigricans*.

This race shows much variation in both the upper and under parts. In the series from Helouan some approach *nigricans*, whilst a breeding bird from that district is a

typical *nigricans*. Others from Cairo resemble *nigricans* in the breast-spotting, but the back is typical *maculata*. Birds shot between Caliub and Benha (north of Cairo) begin to approach *nigricans*. In size similar to *nigricans*.

Average for the wing of sixty males 102 mm. (max. 108, min. 98). Average for twenty-seven females 95.5 mm. (max. 101, min. 92). Culmen of males 19–21 and of females 18–20 mm.

This is the characteristic race on the outer fringe of the Egyptian Delta (never occurring in the desert, and sometimes occurring 20 miles within the Delta). It does not occur as a breeding species much east of Lake Mariotis or in the vicinity of the Suez Canal. It ranges far down the Nile from about ten miles north of Cairo to Wadi Halfa, where it meets *altirostris* (= *nubica* Bianchi).

In winter, birds apparently wander to the Suez Canal.

A male from Sohag, shot on 21 September (on the Nile south of Helouan), has its upper parts identical with *brachyura*, though its under parts resemble *maculata*.

***Galerida cristata moeritica* Nicoll & Bonhote.**

60 birds examined from the Fayoum. This race shows a more marked constancy in its colouring than any other race under review. It is very near *maculata*, and has not got a longer wing as stated by Nicoll ('Ibis,' 1914, p. 546). Neither is it distinguishable from *maculata* by the paler coloration of the upper parts, though about 20 per cent. of the birds examined have a paler back than typical *maculata*. About the same proportion of birds have whiter under parts than *maculata*. The breast-spotting is similar to that in *maculata*, and is often more clear-cut. But not one of the differences is appreciable, nor could the separation of the bird as a geographical form be justified.

But there is a good and almost constant difference in the feathers on the lesser upper wing-coverts. In this race they are silvery-brown, whereas in *maculata* there is never any trace of this silvery colour on the lesser upper wing-coverts. It is a very slight difference, but being almost constant within a definite area, we must accept the subspecies.

The wings of forty-one males average 102·6 mm. (max. 106, min. 100 mm.) and of nineteen females 96·1 mm. (max. 100, min. 92 mm.). Culmen of ♂ ♀ 19–21.

The outer tail-feather of both this race and *maculata* is very variable, and frequently has a wedge of smoky buff on the distal end of the inner web. In other respects they do not differ from the outer tail-feathers of *nigricans*.

Confined to the Fayoum in Upper Egypt.

***Galerida cristata altirostris* Brehm.**

Galerida c. nubica Bianchi (*cf.* Hartert, Nov. Zool. 1919, p. 36).

18 examined from the Dongola bend of the Nile.

Culmen not so heavy as in *somaliensis* and nearer *maculata*. The general coloration on the back is very slightly redder than in *brachyura*, especially on the upper tail-coverts. This reddish colour is particularly noticeable in juvenile plumage.

Wing of eleven adult males varies from 101 to 107, once 110, culmen 19–20, and of seven females, wing from 95 to 101, culmen 17·5 to 19 mm.

The outer tail-feather is invariably paler and with less dark colour than in either of the preceding races, and invariably has a large wedge of pale buff on the distal half of the inner web.

Inhabits the Nile Valley in the Dongola bend at Merowe, Kerma, etc.

***Galerida cristata zion* Meinertzhagen, Bull. B. O. C. xli. 1920, p. 21 : Jerusalem.**

44 examined from Damascus, the Judæan highlands, and the Sea of Galilee.

Nearest to *cinnamomina*, but without a cinnamon tinge in fresh autumn plumage. Darker than *brachyura* in autumn plumage, the feathers having blacker centres. Under parts similar to *cinnamomina*, but the breast-spotting is more marked than in *brachyura*.

In worn plumage birds become more bleached than *cinnamomina*, and are then usually indistinguishable from *brachyura* in similar plumage.

The outer tail-feather has dark colour only in the proximal third of the outer web, but in other respects appears to resemble that of *nigricans*, *maculata*, and *mæritica*.

Wing of males 98–109 mm., culmen 18·5–22. Wing of females 95–104, culmen 19–21.

This race occurs at Damascus, Baalbek, round the Sea of Galilee on all shores, and in the upper Jordan Valley, at Baisan, Jenin (northern Judæan highlands), but not round Nablus where *brachyura* occurs, south along the hills to Jerusalem, and to Hebron, about which place *brachyura* is met.

Note.—An adult female from Aidin, in Asia Minor, shot on 4. vii., appears similar to *zion* in colour, but has a slenderer, not longer bill. Wing 101 mm., culmen 21.

***Galerida cristata cinnamomina* Hartert.**

15 examined from Mount Carmel (Oct.), Haifa (March), Beyrouth (Oct.), and Sidon (Oct.).

In fresh autumn plumage this race has a distinct cinnamon tinge on the upper parts, unlike that of any other race under review. Breast-spotting large and well-marked. In worn plumage birds closely resemble *zion* in autumn plumage, and entirely lack the cinnamon tinge.

The outer web of the outer tail-feather is as in *zion*, but the inner web frequently has a large wedge of buff along the distal half of the shaft.

Wing of males 100–109, and of females 97–99. Culmen of males 18·5–21, and of females 18–20 mm.

Appears to be confined to the coastal strip from Mount Carmel north through Acre, Tyre, and Sidon to Beyrouth and the foot-hills of the Lebanon behind that town, ascending to about 1200 feet. There are no Crested Larks on the higher slopes of the Lebanon.

***Galerida cristata brachyura* Tristram.**

Galerida c. caroli Hartert, Vög. pal. Fauna, 1904, p. 234 : Natron Valley, Egypt.

Galerida cristata eritreæ Zedl. Orn. Monatsb. 1910, p. 59 : Ghedem, Red Sea coast.

103 birds examined from Nablus (northern Judæan highlands), lower Jordan Valley, Dead Sea, Sinai, Suez Canal, southern Palestine, Borollos beach in the northern Egyptian Delta, Nadi Natrun (western Desert of Egypt), coast west from Alexandria to Sollum, and from Ailet in southern Italian Eritrea.

In fresh autumn plumage the upper parts are more sandy coloured than in either *cinnamomina* or *zion*, and altogether much paler than in *maculata*. The under parts have the breast-spotting small and much concealed by the feather edgings. Birds in worn plumage are very variable, and this variation seems to depend on the amount of glare or chemical influence to which the individual has been subjected. Thus, birds from the Wadi Natrun in late winter or spring turn a sort of dirty fawn colour, those from the lower Jordan Valley becoming merely pale sandy colour. Birds from the coastal plain of Palestine bleach very little. Under parts generally whiter than in *zion*.

Three birds from Nablus are nearer *brachyura* than *zion*, and are the only birds about which I have a doubt regarding their correct determination.

I find that birds from Jericho are identical with others in similar plumage from the Wadi Natrun and Sollum. Breeding birds from Suez are identical with Jordan Valley birds in similar plumage.

Two males from Ailet in Italian Eritrea I am unable to separate from *brachyura*.

The size of *brachyura* is variable to a slight degree according to locality.

8 males from northern Sinai average 106·8 in wing.

7 males from southern Palestine average 104·5 in wing.

9 males from the Suez Canal average 104·2 in wing.

17 males from Wadi Natrun average 104 in wing.

21 males from west of Alexandria average 103 in wing.

2 males from Eritrea have wings of 103 and 104.

The average for all localities is 102·1 for 70 males and 97·6 for 33 females. Maximum wing for males 109, and

for females 100. Minimum wing for males 99, and for females 94. Culmen of males from all localities 20–22 mm.

The outer tail-feather is very variable, birds from the Jordan Valley and Sinai having usually the base of the outer web dark, and merely a dark wedge on the proximal portion of the inner web. Birds from Sollum usually have the outer tail-feather with a great deal of dark colouring on the inner web, but only the base of the outer web is dark; but such variation is never constant in any area, and every degree of intermediate design is found.

G. c. brachyura occurs in the lower Jordan Valley to well north of Jericho and at Nablus in the northern Judæan hills. Round both shores of the Dead Sea, throughout Sinai, and in southern Palestine from Ludd south. On the Suez Canal from Port Said to Suez, on Borollos beach (northern Egyptian Delta), at Mersa Matruh and Sollum west of Alexandria, and at the Wadi Natrun. The fact that birds inseparable from *brachyura* occur in Italian Eritrea and at Port Sudan compel me to place Zedlitz's name *eritreæ* as a synonym of *brachyura*. I cannot agree with Selater and Praed ('*Ibis*,' 1918, p. 607) that Port Sudan birds should be united with *altirostris* (*nubica* of Bianchi).

Farther west towards Tripoli occur various races of Crested Larks, the only ones which might be contiguous to *brachyura* being *macrorhyncha* and *arenicola*. These races, which I am unable to distinguish one from the other, are larger than *brachyura* in both wing and culmen, though very similar in colour.

***Galerida cristata somaliensis* Bianchi.**

10 birds from sea-level at Berbera, all obtained in autumn and winter, appear paler than *brachyura* and have a thicker, heavier, but not longer culmen.

6 males have wings 99–105 and culmens 19–22.

4 females have wings 94, 95–99 and culmens 19–20.5.

A pair in my collection from Lake Rudolf appear exactly similar to *somaliensis*: male, wing 105, culmen 18.5; female, wing 102, culmen 19.

***Galerida theklæ* Brehm.**

At Sollum I was surprised to find birds belonging to this species. In all, twelve specimens were collected. I have not been able to compare them with specimens of *Galerida t. cyrenaica* from the type-locality, but they agree perfectly with the description of that race. This is the most easterly point in northern Africa at which these birds have been met.

Wing of five males 94 to 100 mm., culmen 16-17. Wing of four females 91-95 mm., culmen 15-17.

Note on the influences which tend to differentiate plumage colour among the Crested Larks.

The Crested Larks of the Near East afford interesting evidence regarding the influences which tend to differentiate plumage colour.

Beebe, when conducting experiments on some American Doves in captivity, found that artificial humidity produced darker plumaged and more variegated birds.

Ogilvie-Grant found that rainfall seemed to be a factor among Bustard-Quail in south-eastern Asia in determining the darkness or otherwise of plumage. Similarly, the darker-plumaged Robins, Song-Thrushes, etc., of the British Islands, and the still darker Hebridean Song-Thrush, seem to be influenced by the greater rainfall in their homes.

Through the kindness of the Egyptian Meteorological Department, I have been supplied with the following figures. I would point out that the percentage of humidity is the amount of moisture in the atmosphere, and has nothing to do with rainfall. Thinking that perhaps birds might be influenced by conditions during their actual breeding-season, I also worked out conditions for those months during which they breed, and the following are the results.

The races of *Galerida cristata* are arranged, beginning with the darkest-plumaged birds and ending with the palest-plumaged birds:—

Race.	Soil.	Locality.	Average per cent. humidity.		Mean rainfall in inches.	
			Year.	April & May.	Year.	April & May.
<i>Nigricans</i>	Black alluvial ...	Central Egyptian Delta.	70	50	1	0.3
<i>Maculata</i>	Dark alluvial, with Cairo		68	49	1	0.2
	a percentage of Helouan sand.		62	43	1	0.3
<i>Meridionalis</i> ..	Dark brown, often red.	Crete	67	63	20	1
	Dark brown	Cyprus	77	72	15	1
<i>Cinnamomina</i>	Reddish.....	Beirut	68	72	35	3
	Brown	Haifa	70	70	24	1
<i>Zion</i>	Brown to pale brown.	Damascus.....	78	67	10	0.5
		Tiberias	62	56	17	1
		Jerusalem	65	52	24	2
<i>Brachyura</i> ...	Pale brown and sand.	Suez	55	38	0.6	0.1
		Gaza	72	67	16	0.5
		El Arish	76	72	3.5	0.5
		Port Said	74	73	1.9	0.2
		Sollum	76	69	6.0	0.1

From the above table, I conclude that Crested Larks are influenced in the colour of their plumage by protective resemblance to the soil on which they live, and that neither humidity nor rainfall has any effect on their plumage. This same influence appears to affect nearly all ground-birds which more or less live in the open, such as *Ammomanes*, *Alamon*, *Genanthe deserti*, *Eremophila*, *Alectoris*, *Pterocles*, etc.

Finally, I would point out that three races of the Crested Lark (*nigricans*, *maculata*, and *brachyura*) have been living in confinement in the Giza Zoological Gardens near Cairo (where the local wild race is *maculata*) for many years, and have been subjected to identical conditions. These birds have moulted regularly true to their respective races, and have shown no inclination to change the colour of their plumage.

I do not pretend in the above note to have suggested anything new, but when this theory is worked out in detail, it may help those of us who interest themselves in the subject of the effect of external conditions on the problems of evolution.

LULLULA ARBOREA.

Both races of the Wood-Lark occur in Palestine in winter and early spring, and are commonly met with in the Judæan highlands in small flocks. All those I have collected belong to *pallida*, whereas there is an undoubted *L. l. arborea* in the Tring Collection, collected by Aharoni at Rehoboth in the coastal plain on 16. xi. It is still uncertain which is the breeding race.

ALAUDA ARVENSIS.

Alauda arvensis cinerascens.

Alauda cinerea Ehmecke, J. f. O. 1903, p. 149 : Siberia, preoccupied.

Alauda cinerascens Ehmecke, J. f. O. 1904, p. 313 : amended name for *cinerea*.

Alauda cyprica Ehmecke, Ann. Mus. Hung. 1904, p. 300 : Cyprus.

Alauda insularis Ehmecke, Ann. Mus. Hung. 1904, p. 300 : Cyprus.

Both *cyprica* and *insularis* were described from winter birds, and a number of such birds which I have examined undoubtedly belong to this race and not to *cantarella*. I believe the Sky-Lark does not breed in Cyprus, though it is a common winter visitor to that island.

This grey race of the Sky-Lark is, in a large series, distinctly paler above and whiter below than *cantarella*.

All winter visitors to Greece which I have examined belong to this race; also most winter birds to Syria, Palestine, and Egypt. In 1920 they had all left Palestine for the north between 5. iii. and 10. iii., and they had all gone from Egypt by 26. iii. In western Egypt they were very common on the coast at Sollum and Mersa Matruh in January, but in the Fayoum I saw no Sky-Larks in January 1920.

Alauda arvensis schach.

Alauda schach Ehmecke, Ann. Mus. Hung. 1904, p. 299 : East Persia.

This excellent race from eastern Persia is easily recognized from *cantarella* or *cinerascens* by its paler and redder colour; in fact it is merely a pale but large *A. a. arvensis*, and is not a grey but a red bird in autumn plumage. I shot a male at the south end of the Sea of Galilee on 3. iii. with a wing of 119 mm. Four birds in the Tring Collection from eastern Persia have wings from 115 to 122 mm. It is the exception to find *cinerascens* or *cantarella* with wings over 115 mm.

Alauda arvensis cantarella.

Alauda cantarella Bonaparte, 1832 : Central Italy.

Similar to *Alauda a. arvensis*, but lacks the redder feather edgings on the upper parts of the latter and is also much whiter below. The feather edgings are, however, browner (not so grey) as in *cinerascens*.

To this race I can only assign birds from Italy, Sardinia, Corsica, and Sicily. I have not seen typical birds from elsewhere. I have not examined breeding birds from Greece or the Balkans. Stresemann (Avif. Macedon. p. 66) refers all Balkan birds to this race, but as he has not compared his specimens with birds from the typical locality, his remarks are not very helpful.

***Alauda arvensis arvensis* L.**

The typical race of the Sky-Lark seems to be confined in its breeding haunts to the British Islands, Scandinavia, Denmark, and central Europe generally.

***Alæmon alaudipes alaudipes* (Desf.).**

I obtained a male in September in the Syrian Desert 40 miles east of Damascus, which appears to be a new locality. It is identical with Egyptian and Saharan birds.

I found this bird common in western Egypt about Mersa Matruh, Soilum, and on the desert between Siwa and Sollum in January.

It is also a locally common resident in northern Sinai west to the Suez Canal and east to El Arish.

***Chersophilus duponti margaritæ* (Koenig).**

Common on the desert about 15 miles west of Sollum, but not seen elsewhere between Siwa and Sollum. A male obtained has a wing of 101 mm.

***Eremophila alpestris bilopha* (Temm.).**

Obtained in the Syrian Desert 40 miles east of Damascus in September, where they were not uncommon, and also on the desert from Sollum to Siwa where they were scattered about in pairs in January.

Genus ANTHUS.

In working out my collection of Pipits from the Near East and eastern Africa, I had occasion to go into the whole question of four groups which are widely distributed over Asia and Africa, namely *CAMPESTRIS*, *SORDIDUS*, *RICHARDI*, and *LEUCOPHRYS*. For reasons given below I have united the *rufulus*-group with *richardi*.

ANTHUS CAMPESTRIS.

Head distinctly streaked, usually in contrast to an indistinctly or more uniform back. Breast unspotted or with a very few small indistinct spots. In juvenile plumage the back is very mottled and the breast boldly spotted.

1st, 2nd, and 3rd primaries equal, the 4th slightly shorter.

The outer web of the penultimate tail-feather is only dark brown at the base. The outer tail-feather has a triangular-shaped mark on its distal half.

Inner secondaries as long as the longest primaries.

***Anthus c. campestris* L. 1758 : Sweden.**

71 examined from Europe, Algeria, Egypt, Palestine, and western Asia.

Yellowish above. About 80 per cent. are unspotted. Wing 87-98, birds from the east being frequently larger than western birds. Culmen 17-19 mm.

Breeds throughout continental Europe south from central Sweden and Norway, in Asia Minor, Palestine, and the

Mediterranean Islands (Balearics, Corsica, and Crete), Algeria, and Morocco. Common on passage in Palestine, Egypt, and Algeria. Common in winter in north Somaliland and the Sudan, straggling to Kenya Colony.

Anthus c. griseus Nicoll, Bull. B. O. C. xli. 1920, p. 25 : Turkestan.

Agrodroma campestris minor (nec Brehm), R. Blasius, 1900 : Etawah, N.W. India.

30 examined, including the type.

Greyish above compared with the typical race and generally smaller. About 50 per cent. are unspotted. Wing 82-90, 94, 95. Culmen 16-18. A female in Witherby's collection, shot from the nest near Peshawar in north-western India by Harington, is undoubtedly this form, and appears to be a dwarf, having a wing of only 77 mm. and a culmen of 17 mm.

Breeds in north-western India (Peshawar), Turkestan, eastern Persia, Transcaspia, and perhaps Egypt. I obtained an adult and four young birds near Helouan in Egypt on 9. xi. and 15. xi. ; obviously a family party as I saw no others. Nicoll has obtained others in autumn and winter from Egypt. It also occurs in winter in Seistan, northern India, United Provinces, Rajputana, Central India, and south to the Bombay Presidency.

ANTHUS SORDIDUS.

Head and back of adults in fresh autumn plumage more or less indistinctly blotched or streaked. In worn plumage the upper parts tend to become more uniform. General colour above brown, without any of the olive tinge which occurs in the *leucophrys*-group. Breast distinctly marked with diffused spotting in all forms, but in Persia and Palestine one occasionally finds birds with unspotted breasts.

1st to 4th primaries usually almost equal.

The outer web of the penultimate tail-feather is black-brown with a paler fringe. Outer tail-feather never with pure white on it, but yellowish-buff or brown to yellowish-white.

Inner secondaries do not reach to the end of the longest primaries.

Culmen longer, slenderer, and less arched than in birds of the same size among the *leucophrys*-group.

Anthus s. similis.

Anthus similis Jerdon, Madr. Journ. xi. 1840, p. 35 : Jalna, Hyderabad (Deccan), about 200 miles E. by N. of Bombay City.

Anthus cockburniæ Oates, Fauna Brit. India, ii. 1890 : Nilgiri Hills, S. India.

36 examined.

Darker than *jerdoni* and wing slightly smaller. Resident in the hills of southern India.

Anthus s. jerdoni.

Anthus jerdoni Finsch, Trans. Zool. Soc. vii. 1872, p. 24 : Kotgurh, N.W. Himalayas near Simla.

29 examined.

Paler and larger than *similis*. Paler (more sandy) and more uniformly marked than *sordidus*, *hararensis*, or *arabicus*. Distinctly yellower than *captus* or *decaptus*, the under parts being more fulvous than *hararensis* but not so dark as in *sordidus*. Wing 91–104, culmen 18–20.

Breeds in Cashmir and in the Himalayas at Murree, Simla, Chakrata, and Mussoorie, perhaps east to Sikkim. In winter birds descend to the plains of the Punjab and to the Dehra district.

Anthus s. decaptus.

Anthus s. decaptus Meinertzhagen, Bull. B. O. C. xli. 1920, p. 23 : Rud-i-Taman, eastern Persia.

45 examined.

Very similar to *captus* but larger. In fresh autumn and worn plumage the colour of the upper parts does not differ from *captus*, but in autumn plumage the lower parts are more ochreous, and in winter and worn plumage the lower parts are not so white as in *captus*. The spotting on the breast is usually better defined than in *captus*.

In juvenile plumage birds are much more mottled than in adults, both on the back and head, and have broad fulvous margins to the inner secondaries. The breast spotting is also more distinct than in adults. Wing 95–106, culmen 18·5–21·5.

Breeds in Persian Baluchistan, eastern Persia, and in the hills of northern Baluchistan round Quetta, wandering to Sind in winter.

Anthus s. captus.

Anthus leucophrys captus Hartert, Vög. pal. Fauna, 1905, p. 269 : Wadi Zerka, Jordan Valley.

17 examined, including the type.

Paler and greyer than any form except *decaptus*, and much less uniform than *jerdoni* on the upper parts. Under parts with a slight rufous tinge in fresh autumn plumage, which becomes almost white in winter. Wing 90–95, culmen 18–20.

Resident in the Lebanon and Hermon systems of Palestine and Syria and in the Judæan highlands, but not reaching much farther south than Jerusalem. In winter a few birds descend to the Jordan Valley.

Anthus s. arabicus.

Anthus s. arabicus Hartert, Nov. Zool. 1917, p. 457 : Menakha, Yemen, S.W. Arabia.

38 examined, including the type.

Upper parts and sides of the head darker than in *captus* or *decaptus*. Under parts more heavily marked and browner. Larger and more heavily spotted than *hararensis*. Wing 90–101, culmen 18·5–20.

So far only known from Yemen in south-western Arabia.

Anthus s. sokotræ.

Anthus s. sokotræ Hartert, Nov. Zool. 1917, p. 457 : Socotra.

8 examined, including the type.

Intermediate on the back between *captus* and *arabicus*, being paler above and whiter below than in the latter form. Wing smaller and culmen larger than in *arabicus*. Wing 83-90, culmen 20-21.

Anthus s. hararensis.

Anthus nicholsoni hararensis Neumann, J. f. O. 1906, p. 233 : Abu Bekr, near Harar, Abyssinia.

42 examined, including the type.

Scarcely separable from *arabicus*.

Upper parts not so dark and under parts not so heavily spotted and more rufescent than in *arabicus*, to which it seems nearest. I am unable to separate birds from northern Somaliland from Harar birds, though some are imperceptibly paler. Wing 93-98, culmen 17.5-19, 21.

Harar in Abyssinia to the hills of northern Somaliland.

Anthus s. jebelmarraë.

Anthus s. jebelmarraë Lynes, Bull. B. O. C. xli. 1920, p. 16 : Jebel Marra, Darfur.

3 examined, including the type.

Nearest to *hararensis*, but differs in almost entirely lacking the breast-spotting, and the whole plumage is suffused with bright tawny olive. Tail very dark, almost black (instead of brown), and the pale spot on the penultimate tail-feather is reduced to a tiny mark at its extreme tip. Wing 90-95, culmen 19.

So far only known from the Darfur Hills in western Sudan.

Anthus s. asbenaicus.

Anthus s. asbenaicus Rothschild, Bull. B. O. C. xli. 1920, p. 33 : Asben (Aïr), central Sahara.

10 examined, including the type.

Very near *jebelmarraë*, but is slightly paler above and much paler below and with a more distinct breast-spotting. Penultimate tail-feather with more brown at its tip than in *jebelmarraë*. More rufescent than *hararensis*, especially on

the rump, the breast-spotting being less distinct and the whole under parts generally paler. Wing of males 91-98 mm., culmen 19-20.

So far only known from the mountains of Aïr in the central Sahara.

Anthus s. sordidus.

Anthus sordidus Rüppell, Wirbelthiere von Abyss. 1835, p. 103, pl. 39. fig. 1: Simen Province, Abyssinia.

Simen, Semyen, or Samen Province is in northern Abyssinia between Lake Tsana and Massowah.

24 examined from Shoa in the central highlands of Abyssinia, some 200 miles south of the typical locality.

Much darker and more uniform above, and much redder below than *hararensis*. Wing 97-102, culmen 17-18.

Inhabits the hills of central and northern Abyssinia.

***Anthus sordidus* subsp. ?**

Sclater and Praed (Ibis, 1918, p. 615) thought that birds from Erkowit (behind Suakim on the Red Sea coast) did not agree with any race, though nearest to *hararensis*, but they were less plainly striped on the back. The specimen on which Sclater and Praed made the above remarks was obtained in March. Though undoubtedly belonging to the *sordidus*-group, it is unlike any race either at Tring or in the British Museum. The plumage, however, strikes me as being juvenile, though the time of year when it was shot rather points to this not being the case.

Anthus s. longirostris.

Anthus nicholsoni longirostris Neumann, J. f. O. 1906, p. 232: Gardulla, west of Gandjule Lake (which is the same as Lake Abaya in southern Abyssinia, 150 miles N.E. of the northern end of Lake Rudolf).

26 examined, including the type.

Nearest to *sordidus* and much darker than *hararensis* or *arabicus*. Not quite so dark as *sordidus* and apparently less uniform on the back. Under parts not so fulvous as in

sordidus and more heavily spotted. Wing 90-102, culmen 17-19.5.

This race appears to extend from southern Abyssinia to Kenya Colony, where I collected specimens at Naivasha and Nakuru in the Rift Valley, and I have examined others from Kisumu on the Victoria Nyanza and the Kedong Escarpment.

Anthus s. nyassæ.

Anthus nicholsoni nyassæ Neumann, J. f. O. 1906, p. 233 : near Songea in Tanganyika Territory, east of the north end of Lake Nyasa.

I have not examined any specimens from the type-locality.

Upper parts (*teste* Neumann) spotted as in *nicholsoni* and *longirostris*, darker than *longirostris* but with a different and more brownish tone on the plumage. Lower breast and abdomen darker than *nicholsoni* or *longirostris*, sharply defined from the pure white chin and throat. Sides of head darker. Wing and culmen smaller. Wing 86-95.

Inhabits the country north and north-east of Lake Nyasa to Uhehe in Tanganyika Territory.

Anthus s. nicholsoni.

Anthus nicholsoni Sharpe ed.-Layard's B. S. Afr. 1884, p. 536 : South Africa ; no definite loc.

Many examined from Zululand and Bloemfontein.

Above paler (yellowier) and more uniform than *longirostris*. Below not so fulvous and less heavily spotted.

Appears to extend throughout Cape Province (Cape Town and Kingwilliamstown) to Bloemfontein and the Vaal River in the Transvaal, and to Zululand and perhaps Damaraland.

ANTHUS RICHARDI.

In comparing the *richardi*- and *rufulus*-groups from Asia, I was struck by the lack of any definite character distinguishing them, and am therefore inclined to agree with Stresemann (Nov. Zool. 1912) and Hartert (Vög. pal.

Fauna) in uniting them all as geographical races of the same species ; in fact, some specimens of typical *rufulus* from India are merely small editions of *A. r. richardi* or *striolatus*.

Having united Asiatic *A. rufulus* with *A. richardi*, it is only logical to include as geographical races of *richardi* the various African races which hitherto have been treated as races of *rufulus*. Oscar Neumann apparently came to the same conclusion (J. f. O. 1906, p. 231).

Head and back always distinctly and usually boldly blotched and streaked. Breast always distinctly spotted.

2nd and 3rd primaries usually equal and longest, but 1st and 4th come very close.

The outer web of the penultimate tail-feather is only dark brown at the base. The outer tail-feather has a triangular-shaped white mark on its distal part. This white is rarely tinged with buff or brown.

Inner secondaries usually shorter than the longest primaries, but frequently equal to them and occasionally longer. This variability occurs most frequently in birds from tropical and southern Africa.

Hind claw longer than in the *campestris*-, *sordidus*-, or *leucophrys*-groups, when birds of the same size are compared.

***Anthus r. richardi*.**

Anthus richardi Vieillot, Nouv. Dict. d'Hist. Nat. xxvi. 1818, p. 491 : France.

35 examined.

Distinguished at once from all other races by its huge hind claw and longer wing. Wing 90–100, culmen 15·5–18, hind claw 16–22 mm.

Breeds in central and southern Siberia, and in eastern Turkestan to the Altai and Tianshan systems, east to Manchuria and northern China—Kansu, Szechwan, Nanshan, Kukunor, and the upper Hoang Ho.

Winters in Europe west to England and France, in Egypt, the Sudan, Palestine, Asia Minor, India, and Ceylon, Siam (rare), southern China, and Hainan.

Anthus r. sinensis.

Corydalla sinensis Bonaparte, Consp. Av. i. 1850, p. 247 : southern China.

Corydalla infuscata Blyth, Journ. As. Soc. Bengal, 1861, p. 96. Type-locality given as the Philippines, but the specimen came from the hills of Foochow in southern China (*cf.* Swinhoe, P. Z. S. 1863, p. 272).

Bonaparte's description of *sinensis* is that the bird is smaller, darker, and more fulvous—"fusco-ferruginea"—below. I think there is little doubt he meant this race.

13 examined.

This appears to be a good race, though a series of breeding birds are badly needed. Those I have examined are mostly winter birds, but are distinctly smaller than *A. r. richardi* and incline to be more rufous below. But some examples of the typical race from southern Siberia and Turkestan are equally rufous below, though this is the exception. Wing 85-91, culmen 17-18, hind claw 15-19 mm.

La Touche, who appears to recognize this southern Chinese race of Richard's Pipit (Ibis, 1905, p. 46), states that they breed on the low hills round Foochow, laying in April and May. They arrive from the south in April and leave for the south in October, whereas *A. r. richardi* is but a winter visitor to Foochow, arriving from the north in October and leaving again in April. Obtained in Hainan and the Philippines in winter.

Anthus r. striolatus.

Anthus striolatus Blyth, J. A. S. Beng. xvi. 1847, p. 435 : Darjiling, eastern Himalayas.

12 examined.

Hind claw smaller than in either of the preceding races. Frequently with less white on the penultimate tail-feather than in *A. r. richardi*. Slightly paler, more tawny, than *sinensis*. Wing 87-99, culmen 16-17.5, hind claw 10.5-15.5 mm.

Breeds in Central Asia and the Himalayas :—Argun River (*Dybowski*), Ala Shan (*Przewalski*), and Sikkim at 15,000 ft. (*Blanford*). Passes through southern Tibet in September

on autumn passage (Ibis, 1906, p. 61), and winters in Assam, northern Siam, southern Tenasserim, and throughout the Indian Peninsula south to Ceylon.

Anthus r. rufulus.

Anthus rufulus Vieillot, Nouv. Dict. d'Hist. Nat. xxvi. 1818, p. 294: Bengal.

22 examined from Bengal, Nilgiris, Mysore, Etawah, Central Provinces, Cashmir, Sikkim, and Yunnan.

Browner and redder on the upper parts than any of the following four races. Under parts tinged with rufous as in *malayensis*, and darker below than *lugubris*. Much smaller than any of the preceding races. In all characteristics it is nearest to *cinnamomeus* from Abyssinia.

Birds from Ceylon appear somewhat smaller (wings 76–82 mm.) and darker, whilst birds from southern India appear slightly more rufous than Bengal birds. Wing 76–86, culmen 15–18, hind claw 9, 10–15 mm.

Is apparently resident in the whole of India from Cashmir to Ceylon, and east throughout the Himalayas below 6000 ft. to Yunnan, where it must meet *sinensis* somewhere in southern China.

Anthus r. medius.

Anthus medius Wallace, P. Z. S. 1863, p. 488: Timor.

21 examined.

Above darker than *rufulus*, but very similar to *malayensis* and *lugubris*. Under parts much whiter than *rufulus*, *malayensis*, and *lugubris*, but not almost pure white as in *albidus*. Hind claw similar to *albidus*, and much smaller than in *malayensis* and *lugubris*. Wing 82–86, culmen 16–17, hind claw 10–11 mm.

Inhabits (*teste* Stresemann) Timor, Kisser, Savu, Letti, Moa, and Sermata.

Anthus r. albidus.

Anthus r. albidus Stresemann, Nov. Zool. 1912, p. 316: South Flores.

13 examined, including the type.

Darker above than any of the other small Asiatic forms, and completely lacking any rufous tinge. Under parts pure white. Hind claw smaller than in *malayensis* or *lugubris*, but as in *medius*. Wing 78-83, culmen 16-17, hind claw 10-11 mm.

Inhabits Bali, Lombok, Sumbawa, Flores, and Sumba.

Anthus r. malayensis.

Anthus malayensis Eyton, P. Z. S. 1839, p. 104: Malacca. 26 examined.

Above similar to *medius* and *lugubris*. Under parts as in *rufulus*. Hind claw similar to *lugubris* and larger than either *albidus* or *medius*. Wing 80-87, culmen 11-12.5, hind claw 11-16 mm.

Inhabits Malay Peninsula, Sumatra, Java, and perhaps Borneo (*Stresemann*).

Anthus r. lugubris.

Corydalla lugubris Walden, Trans. Zool. Soc. London, ix. 1877, p. 198: Philippines.

10 examined.

Above similar to *malayensis* and *medius*. Under parts redder than in *medius*, but not so red as in *rufulus* or *malayensis*. Breast-spotting much less distinct than in the four previous races. Hind claw as in *malayensis*. Wing 75-82, culmen 11-12, hind claw 12-15 mm.

Inhabits the Philippine Islands and Palawan.

Anthus r. cinnamomeus.

Anthus cinnamomeus Rüppell, Neue Wirbelthiere, p. 103, 1835: Simen, Abyssinia.

For the position of Simen, see under *Anthus sordidus sordidus*.

Over 30 examined from Addis Abeba and Ailet in Italian Eritrea near Massowah, and southern Abyssinia.

These birds agree with Rüppell's description, and although much larger than *A. r. rufulus*, are somewhat similar but more cinnamon in colour. Very similar in colour to *A. r. raalteni* from South Africa, but slightly darker.

Two birds from Senaar and Eritrea seem to be very near, but are slightly less cinnamon. Selater and Praed (Ibis, 1918, p. 615) found no birds of this race in the Butler, Chapman & Lynes, or Christy collections; but there are in the British Museum examples from Khartoum and the Lado Enclave which they assign to this race, and which have presumably been compared with Abyssinian birds.

Wing 88-96, culmen 16-17.5, hind claw 11 mm.

Apparently inhabits the highlands of Abyssinia, east to Ailet near Massowah, and perhaps west to the Sudan.

Anthus r. annæ, subsp. nov.

A series of 17 birds in the collection of Sir Geoffrey Archer from northern Somaliland, 6 of which are in freshly-moulted plumage, when compared with *cinnamomeus* from Abyssinia, shows that the Somaliland race almost completely lacks the cinnamon tinge of the Abyssinian birds. They are a much browner bird. Under parts much whiter. Generally smaller in both wing and culmen. Birds from south-western Arabia agree in every way. In worn plumage they bleach to various shades of dull uniform brown or earth-brown.

Wing of males 86-89 mm., culmen 16-18 mm.

Wing of females 78-86 mm., culmen 15-16 mm.

Hind claw 9-11 mm.

It is curious that Hartert (Nov. Zool. 1917) and other writers should have assigned this distinct race to *A. r. cinnamomeus*.

Type. ♀ 29.ix.18, Megago, northern Somaliland, 4000 feet (No. 1571, coll. G. Archer).

Anthus r. lacuum.

Anthus r. lacuum Meinertzhagen, Bull. B. O. C. xli. 1920, p. 22: Lake Naivasha in Kenya Colony.

84 examined.

Darker, less cinnamon and more fulvous than *cinnamomeus*. Generally a greyer bird. Wing 82-91, 95, 99, 100; culmen 15-17, 18; hind claw 9-12.5 mm.

Appears to be a resident from the coast at Bagomoyo (Tanganyika Territory) to the north end of Lake Tanganyika,

between Albert) Edward and Kivu lakes, around the Victoria Nyanza, Lake Nakuru, Naivasha, and on the Kedong Escarpment, Nairobi and the Athi plains, and at Nyeri in Kenya Colony.

A single bird from Taveta very closely resembles *cinnamomeus*. Birds from the west of Victoria Nyanza are slightly more cinnamon than birds from east of that lake, but such variation is not sufficiently distinct or constant to warrant a further separation.

***Anthus r. cameroonensis*.**

Anthus cameroonensis Shelley, Birds of Africa, ii. 1900, p. 320: Camaroon Mountain, 10,000 ft.

Three birds from 130 km. west of Lake Tanganyika and at over 6000 feet appear to agree with typical examples. A fourth bird in the Tring Collection from the same locality agrees better with *A. r. lacuum*.

This is the darkest race of the species, and looks like a melanistic variety when compared with other races. Upper parts with black centres to the feathers and dark fulvous fringes. Breast thickly spotted with black, throat whitish, abdomen and lower breast fulvous. Wing 92-96, culmen 16-17, hind claw 9-10 mm.

Camaroon Mountain and the hills of central Belgian Congo.

***Anthus r. raalteni*.**

Anthus raalteni Temm. MSS. Lichtenstein, Verz. Vög. Säuget. Kaffernl. 1842, p. 13: South Africa.

Original description not examined.

16 specimens examined.

Very close to *cinnamomeus* but paler. Not so grey as *lacuum*. Wing 82-93, culmen 15-17, hind claw 9-13.

Resident in the Transvaal, Natal, and on the Limpopo River.

***Anthus r. bocagii*.**

Anthus bocagii Nicholson, Ibis, 1884, p. 469: Angola.

39 specimens examined.

A paler and greyer bird than *raalteni*. Wing 85-95, culmen 16-17, hind claw 9-14 mm.

Southern Angola.

The *leucophrys*-group of Pipits are in no sense Palæarctic, but as I was compelled to work them out when dealing with the *sordidus*-group, I give the results of my labours.

I found that the *leucophrys*-group of plain-backed Pipits showed great variation in the same area: in Angola and tropical eastern Africa it was obvious that a dark and pale race co-existed. The differences did not appear to be dimorphic. I tried to separate birds on structural differences, but failed. Culmen, tail-feathers, size of wing, etc., all failed. I was therefore compelled to separate birds on colour alone, and find that they fall very well into two groups or species, a dark bird whose oldest name is *gouldi*, and a pale bird whose oldest name is *leucophrys*.

Owing to the difficulty in describing these various colours, I have had to resort to Ridgway's 'Nomenclature of Colours,' 1886, reference being given in brackets, thus (R. iii. 19), meaning Ridgway, pl. iii. fig. 16.

ANTHUS LEUCOPHRYS.

Upper parts entirely uniform, except in immature birds when slight traces of blotching occur. General colour above yellowish dark earth-brown, sometimes with a slight olive tinge, but the shade is very variable. Under parts always tinged with fulvous, darkest in *saphiroi*, palest in *neumanni*. Breast-spotting usually indistinct and blurred, though in *goodsoni* it is frequently well-marked.

Throat whitish in contrast to the rest of the under parts.

First four primaries more or less equal.

Tail-feathers very variable, but never with white on them as in the *richardi*-group.

Inner secondaries usually fall short of the tips of the longest primaries, but sometimes equal them.

Culmen stumpier than in the *sordidus*-group and more arched.

Anthus l. leucophrys.

Anthus leucophrys Vieillot, Nouv. Dict. xxvi. 1818, p. 502 :

“Cape of Good Hope.”—The main points in the original description are:—“An eye-stripe extending to the sides of the head. Whole upper parts brownish grey, with small blackish spots on the head.” This clearly indicates the pale bird and not the darker race of the *gouldi*-group, though the marked eye-stripe is more characteristic of the latter group.

Upper parts dark sepia (R. iii. 3), lower parts wood-brown (R. iii. 19). Breast-spotting indistinct and smudgy. Wing 93–101, culmen 18, and hind claw 12·5 and 13 mm.

Cape Province, southern Natal, Zululand, and the southern districts of the Orange Free State.

Anthus l. vaalensis.

Anthus vaalensis Shelley, Birds of Africa, ii. 1900, p. 311 : Newcastle in northern Natal.

Upper parts paler than in the preceding race and uniform bistre (R. iii. 6). Under parts pale wood-brown (R. iii. 19). Breast-spotting indistinct and smudgy. Larger wing and smaller hind claw than in *A. l. leucophrys*. Wing 102–107, culmen 17–18, and hind claw 9–11 mm.

This Pipit inhabits northern Natal, Transvaal, Bechuanaland, and the Orange Free State south to Bloemfontein. A bird from Deelfontein (Cape Province) in the British Museum appears to be also of this race. As the specimen has no original label, I do not attach much importance to it.

Anthus l. neumanni.

Anthus l. angolensis Neumann, J. f. O. 1906, p. 236 : Ambaca in Angola. Name preoccupied by *Anthus angolensis* Bocage, Journ. Sci. Lisboa, viii. 1870, p. 341, which from the description is obviously *Anthus chloris* of Lichtenstein.

Anthus l. neumanni Meinertzhagen, Bull. B. O. C. xli. 1920, p. 23. (Type and description as for *Anthus l. angolensis* Neumann, J. f. O. 1906. No. 158 in the Tring Museum.)

Upper parts slightly paler than *A. l. leucophrys*, but not so pale as is *vaalensis*. Lower parts slightly whiter and breast-spotting more distinct than in *vaalensis* or *A. l. leucophrys*. Smaller than *vaalensis*. Wing of 16 males 98–105, and of 10 females 90–98 mm. Culmen 15–18 and hind claw 9–11 mm.

Inhabits Angola. Does not occur in Masailand or tropical eastern Africa (as stated by Neumann, J. f. O. 1906), where it is replaced by *Anthus l. goodsoni*.

***Anthus l. goodsoni*.**

Anthus l. goodsoni Meinertzhagen, Bull. B. O. C. xli. 1920, p. 23: Nakuru, Kenya Colony. Type in the Tring Museum.

Upper parts as in *A. l. leucophrys* and slightly darker than in *neumanni*, though a bird from Nyeri just to the west of Mount Kenya is as pale as *neumanni*. Under parts paler than in *A. l. leucophrys* and as in *neumanni*. Breast-spotting even more distinct than in *neumanni* and much more pronounced than in *A. l. leucophrys*. Wing and culmen as in *A. l. leucophrys* and *neumanni*, but the hind claw generally longer than *neumanni*. Wing of males 95–102, and of females 90–97 mm. Culmen 15–18 and hind claw 10–13 mm.

Inhabits Masailand, Nakuru, Nairobi, Naivasha, and north to the base of Mount Kenya. Also found in Uganda at Bukoba on the western shores of the Victoria Nyanza, and apparently near Lake Kivu.

***Anthus l. saphiroi*.**

Anthus l. saphiroi Neumann, J. f. O. 1906, p. 235: Belassiri, near Harar in Abyssinia. Type in the Tring Museum.

This is the darkest form of the *leucophrys*-group except *zenkeri*, and stands very near *Anthus s. sordidus*, from which it differs in its plainer back and slightly paler upper and lower parts.

Darker than in *A. l. leucophrys* on the upper parts. Under parts pale cinnamon (R. iii. 20). Breast-spotting more distinct than in *A. l. leucophrys*. Wing of males 95–102, and of two females 91–93 mm. Culmen 15–18 and hind claw 9–12 mm.

Inhabits southern Abyssinia. Three birds from north-western Somaliland in the British Museum are nearest the race, and a series collected by Archer from northern Somaliland are identical with topo-typical specimens.

Anthus l. zenkeri.

Anthus l. zenkeri Neumann, J. f. O. 1906, p. 235 : Jaunde, Camaroon. Type in the Berlin Museum.

None examined. Described from three specimens. Said to be near *saphiroi*, but the upper parts are slightly darker. Edgings to the wing-coverts and wings a darker rust-red. Also a redder-rusty tinge on the rump and upper tail-coverts. Wing 91-94, culmen 15-16 mm.

In the Gold Coast, Northern and Southern Nigeria, occurs a race of *leucophrys* which is probably *A. l. zenkeri*. These birds are smaller (wing 87-97) than *A. l. leucophrys*, but the upper parts are very similar, though slightly darker than *saphiroi*, and have on an average more rust-colour on the upper tail-coverts. Breast-spotting much more distinct than in *A. l. leucophrys*.

A series of Pipits of the *leucophrys*-group from the Belgian Congo, Nyasaland, and N. Rhodesia, also appear to agree with the description of *zenkeri*, but until the type or typical birds have been examined, such questions cannot be definitely decided.

ANTHUS GOULDI.

This group differs from the *sordidus*- and *leucophrys*-groups in having uniform dark brown upper parts, without a trace of mottling except in immature birds. The colour is much darker in every race of this species than it is in any of the *leucophrys*-group, and often assumes a colour not unlike a very dark maroon with a tinge of plum-colour. Eye-stripe better developed than in *leucophrys*. No trace of yellowish or olive on the upper parts as in *leucophrys*.

Under parts always suffused with dirty ochreous, darkest in *omoensis* and paler in *prunus*. Breast-spotting indistinct,

but a large percentage of birds are more distinctly spotted than those of the *leucophrys*-group.

Throat white, in contrast to the rest of the under parts.

First four primaries almost equal.

Outer tail-feather always darker than in the *leucophrys*-group.

Inner secondaries invariably fall short of the tips of the longest primaries.

Culmen as in the *leucophrys*-group, and, if anything, more stumpy.

***Anthus gouldi omoensis*.**

Anthus leucophrys omoensis Neumann, J. f. O. 1906, p. 234: Ergino Valley, between Gofa and Doko on the Omo River. The Omo is in southern Abyssinia and flows into the north end of Lake Rudolf. Type in the Tring Museum.

Upper parts uniform dark hair-brown (R. iii. 12), lower parts raw umber (R. iii. 14). Wing 92-100, culmen 11-18, hind claw 9-12 mm.

Inhabits the Omo River Valley in southern Abyssinia.

***Anthus gouldi turneri*.**

Anthus g. turneri Meinertzhagen, Bull. B. O. C. xli. 1920, p. 24: Kituni, N.W. Kenya Colony. Type in the Tring Museum.

Upper parts uniform dark hair-brown (R. iii. 12). Under parts pale wood-brown (R. iii. 19) and not so dark as in *omoensis*. Breast-spotting large and distinct, with pear-shaped blotches.

Wing of males 94-100, and of females 90-95 mm. Culmen 15-19, hind claw 9-13 mm.

Inhabits the northern, eastern, and western shores of the Victoria Nyanza, and north to Mount Elgon.

Birds from southern Abyssinia and the Sudan provinces of Mongalla and Bahr-el-Ghazal appear to belong to this race, though Sudan birds are slightly paler below and are not so heavily marked on the breast.

Anthus gouldi gouldi.

Anthus gouldi Fraser, Proc. Zool. Soc. London, 1843, p. 27: Cape Palmas on the extreme south-east of the Liberian coast.

Upper parts as in *turneri*. Under parts slightly paler. Generally a smaller bird. Wing 87-93, culmen 15-17, hind claw 10-12 mm.

Inhabits Liberia, Sierra Leone, and the Gambia.

Anthus gouldi prunus.

Anthus g. prunus Meinertzhagen, Bull. B.O.C. xli. 1920, p. 24: Benguella, Angola. Type in the Tring Museum.

Upper parts very similar to those of the rest of the group, but with frequently a maroon or almost plum-coloured tinge on the rich uniform hair-brown (R. iii. 12). Under parts varying from pale wood-brown (R. iii. 19) to whitish. Breast spotting indistinct in adults but clearly marked in immature birds. Well-developed eye-stripe extending back to the sides of the head.

The upper parts of immature birds are slightly tinged with yellow, paler and inclined to be blotched.

Wing of males 93-102, and of females 90-101 mm. Culmen 15-17 and hind claw 10-15 mm.

Inhabits Angola.

Anthus gouldi bohndorffi.

Anthus leucophrys bohndorffi Neumann, J. f. O. 1906, p. 236: Kassongo on the Upper Congo. Type in the Berlin Museum.

None examined, but from the description probably belongs to this group.

Upper parts as dark or darker than *omoensis*. Under parts, except for the white chin, very dark. The centre of the under parts paler—dirty white—and the flanks dark earthy brown. Its chief character in relation to *omoensis* is in the centre of the under parts being differently coloured to the flanks.

Described from one specimen. Wing 96, culmen 14 mm.

MOTACILLA FLAVA.

I have attempted in the following notes to collate from my own observations and from all published material a résumé of the migratory movement of the races of *Motacilla flava* which occur in the Near East and in eastern Africa south to the Cape.

***Motacilla f. flava* L.**

Autumn passage commences in Palestine in early August and in Egypt in late August, birds becoming common in the former country by 21. viii. and in Egypt by 8. ix. Passage continues till the end of September and early October. Birds do not remain through the winter in Palestine, but a few appear to do so in Egypt.

In the Sudan they arrive throughout October and remain through the winter.

They commence arriving in Kenya Colony and Uganda from 30. ix., and are common throughout the winter.

Autumn migration passes well inland, down the Nile and Rift Valleys, only a few birds passing down the coast. Many birds continue south to Natal and the Transvaal, where I have seen them at Pretoria on 6. xi. and at Harrismith on 4. xii.

Birds commence to leave South Africa towards the end of March, and large numbers pass north through Kenya Colony throughout April. The latest spring record for eastern Africa seems to be 2. v., but the bulk have passed by 20. iv.

This race was not noted passing up the coast of eastern Africa on spring passage.

The masses of Yellow Wagtails of all sorts—mainly *M. f. campestris*—which collect at Entebbe at the north-western corner of the Victoria Nyanza from late March to late April form one of the most wonderful sights I have ever seen. Acres and acres of grass-land are carpeted with yellow, the birds huddled together, resting and feeding, many rising a few inches into the air, catching flies and mosquitoes, and others too tired to fly and merely running on before one's feet

Spring passage in the Sudan extends commonly to the middle of April, and birds have been obtained as late as 12. v. Spring passage north leaves the Egyptian Delta to the east and passes over the Fayoum and Wadi Natrun. The absence of migratory Yellow Wagtails from the Egyptian Delta in spring is most remarkable. Passage in the Fayoum and Wadi Natrun extends from about 15. iii. to well on into April, being very strong from 18. iii. to 20. iii.

A few pass north through Palestine from the middle of March to the middle of April, and birds have been obtained on spring passage in Sinai from 31. iii. to 30. iv.

***Motacilla f. dombrowskii* (Tschusi).**

No autumn record for Palestine, Egypt, or the Sudan. Six obtained in the Sudan from 31. iii. to 17. iv. Not uncommon on spring passage in the Fayoum and in Sinai. Obtained in Palestine on 22. iii.

No record from Kenya Colony or Uganda.

***Motacilla f. beema* Sykes.**

No record for Egypt or the Sudan. A few obtained in Kenya Colony (Nairobi and Kisumu) in early March. Sladen obtained examples in Palestine on spring passage in 1918.

***Motacilla f. thunbergi* Billberg.**

No Palestine record—in fact, there is no mass migration of any Yellow Wagtail in Palestine at any season. Scarce on autumn passage in Egypt. No autumn record for the Sudan, though Reichenow (Vög. Afr.) records birds from Khartoum and Senaar without date. A regular winter visitor to northern Somaliland.

In Kenya Colony they commence to arrive at Nairobi and Naivasha during the last days of September, and are quite common all over the country by the middle of October.

This race is common on both passages in the Caucasus and southern Russia, and appears to jump direct in one long flight from those districts to its winter haunts in the tropics of Africa.

It has occurred south to the Transvaal in winter (Stark, Fauna S. Afr. i. p. 263).

Birds arrive in eastern Africa in equal numbers both on the coast and inland.

The dates for spring passage are slightly earlier than for *M. f. flava*. They are not uncommon in spring in Egypt, and seem to be very rare in the Sudan. No spring record for Palestine.

***Motacilla f. cinereocapilla* Savi.**

No Palestine record. No autumn record for Egypt. Reichenow records it from Lado and Berbera. Recorded (Nov. Zool. 1918, p. 284) as fairly common in the Elgon District (N.E. Uganda) in winter. I obtained an adult male at Entebbe on the Victoria Nyanza on 3. iv.

Not uncommon on spring passage in Egypt. Obtained on spring passage at Port Sudan on 13. v. and 16. v. (Ibis, 1909, p. 392).

***Motacilla f. campestris* Pall.**

It is curious that there should be no Palestine or Egyptian record for this form. Apparently very rare in the Sudan, though Reichenow records it from Khartoum.

This is the commonest winter Wagtail in Kenya Colony, first autumn arrivals appearing at Nairobi in the middle of September and at Nakuru on 11. ix., a few straggling south to South Africa—Transvaal and Natal.

This race is equally common on the coast and inland on autumn passage.

Birds commence to move north from Kenya Colony and Uganda about the middle of March. My latest spring record is on 3. iv. on the Victoria Nyanza, though they were in thousands on 16. iii.

At Lamu, on the east coast of Africa just north of Mombasa, they streamed north from about 24. iii. to 15. iv., and all had disappeared by 26. iv.

Reichenow records them from Berbera in Somaliland without date.

At first sight, many of the specimens I collected in eastern Africa looked very like the western *rayi*, for they had greenish heads. But *campestris* has a yellowish-green back and more yellow on the head and sides of the neck than *rayi*, the latter having a slight brown tinge on the back, which is never the purer yellow-green colour of *campestris*. Quite 30 per cent. of my eastern African *campestris* had green heads.

***Motacilla f. pygmæa* Brehm.**

A partial resident in the Egyptian Delta and the Fayoum, large numbers disappearing in mid-winter. I am not, however, aware of its occurrence outside Egypt, Butler's bird (*Ibis*, 1909, p. 392) being apparently wrongly identified (see also Sclater & Praed, *Ibis*, 1918, p. 613).

***Motacilla f. leucocephala* (Przew.).**

Yellow Wagtails with white heads have been obtained in Egypt and eastern Africa, and are supposed to be aberrations. Is Przewalski's *leucocephala* also an aberration?

It was first described in 1887 from birds obtained in the southern Altai; it was again reported by Zarudny at Merv and on the Oxus in Turkestan. Whistler shot a male at Jhelum in India on 2. v., Zarudny again collected three in the Orenburg District (Grote, J. f. O. 1919, p. 372), and Suschkin states they breed regularly (*sic*) in the Tschalkar District of the Khirgiz Steppes and occasionally in the Steppe Province.

Finally, Suschkin (Messag. Ornith. 1915) found a breeding colony at Achit Nor in north-western Mongolia, where he describes them as common in the swampy meadows, having obtained 18 birds and eggs. It would therefore appear that this race is not an aberration, and that its breeding range is a narrow strip of country running just south of the range of *beema*, from north-western Mongolia to the Khirgiz Steppes, but it is everywhere rare and local.

***Motacilla f. feldegg* Michahelles.**

Uncommon on autumn passage during September in Palestine and not uncommon in Egypt, where some years it

is abundant. A common winter visitor to the Sudan and Abyssinia from December to May. Fairly common in Kenya Colony and Uganda in winter, especially on the Victoria Nyanza from January to early April; but other birds arrive about the end of October, for I saw a small flock at Entebbe on 20.x. and several at Naivasha and Nakuru in late October. I have seen two winter birds from northern Somaliland.

Not observed on the coast of eastern Africa or at Nairobi in 1915 or 1916.

South of the Victoria Nyanza they do not seem to go, but Ayres (*teste* Gurney) obtained one in the Transvaal.

Birds appear to begin to leave the tropics in late March and the Sudan in late April. They are abundant on spring passage in the Fayoum and Wadi Natrun, but very rare in the Egyptian Delta.

A few pass north through Palestine in late March, and they have been shot in Sinai on 29. iii., and have been reported as plentiful from 12. iv. to 18. iv.

They breed just east of Aleppo in northern Syria, nine nests being found.

Flocks passed through Crete from 27. iii. to 9. iv. (*Lynes*).

Both yellow- and white-eye striped varieties have been obtained in Egypt and the Sudan.

***Motacilla f. melanogriseus* (Hom.).**

No Palestine record. Two obtained by Butler in December and March at Khartoum, and there are others in the Brehm Collection at Tring from Egypt and the Sudan.

Nicoll (*Hand-list Birds of Egypt*) records it as a rare spring visitor, but gives no further details.

No record for eastern Africa.

I have seen a bird from northern Somaliland collected by Archer on 31. iii.

***Lanius senator niloticus* (Bp.).**

A scarce winter visitor to Kenya Colony, a pair being obtained in the Maragoli Hills on 10. i.

Lanius excubitor elegans Swains. and

Lanius excubitor aucheri Bp.

The ranges of these two races of Grey Shrike appear to have a large overlap in southern Palestine and Egypt and on the Red Sea Littoral.

West of the Egyptian Delta (common at Mersa Matruh but absent from Sollum) all birds are pure *elegans*, whilst east of the Delta I obtained a pure *aucheri* at Helouan (Dec.), at Suez (May), and on the Suez Canal (Febr.). A bird from Jericho in the Jordan Valley, where nearly all birds are pure *aucheri*, is indeterminable, and can only be called *aucheri* > *elegans*. Pure *aucheri* also occurs at the north end of the Jordan Valley, all round the Sea of Galilee, and there is a small colony a few miles north of Acre on the coast. On the other hand, birds from the coastal plain of Palestine south of Mount Carmel, where Grey Shrikes are very rare, appear to be pure *elegans*. *Lanius elegans* becomes common round Gaza and throughout northern Sinai, and is the usual bird of the Egyptian Desert east of the Delta and on the Suez Canal throughout its length. There are no Grey Shrikes in the Judæan highlands, Syrian Desert, at Damascus, or in the Lebanon, and I saw none in October when I motored down the coast from Beyrout to Acre, except the one patch near Acre.

The colour on the upper parts of these races is not a reliable character, though *elegans* usually has more white in the wing and tail. The best guide is the colour of the under parts, nearly always pure white in *elegans* and pale greyish-blue in *aucheri*, and also the spot on the under wing-coverts, which is always well-defined in *aucheri* and absent or ill-defined in *elegans*.

Lanius cristatus isabellinus Hemp. & Ehr. and

Lanius cristatus phœnicuroides (Schalow).

Both these Asiatic Shrikes occur fairly commonly in Kenya Colony in about equal numbers from the middle of November to the end of January, or at least they did during 1915, 1916, and 1917.

Most of the birds were obtained between Nairobi and the coast in December and January, though two were obtained at Kisumu on the Victoria Nyanza on 8. i. and 15. i. (both *isabellinus*), and another (also *isabellinus*) at Dar-es-Salaam on the coast of Tanganyika Territory on 25. xi.

L. c. isabellinus has been recorded by Reichenow (Vög. Afr.) from Bukoba on the Victoria Nyanza and Bagomoyo on the coast of Tanganyika Territory. Lönnberg records one from the northern Guaso Nyero (Kenya Colony) on 14. iii., and Oberholser records one from Kilimanjaro at 5000 feet on 9. xii.

My East African collection contains 7 adult and 2 immature *isabellinus*, and 7 adult and 10 immature *phænicuroides*. The juvenile birds are very difficult to determine from the young of *Lanius collurio*, but are never so red on the back. They usually have a slightly redder tail. The young of *isabellinus* and *phænicuroides* are still more difficult, but in most cases, December and January birds are beginning to show a slight rufous tinge on the crown in the case of *phænicuroides*.

I am not aware that *phænicuroides* has been previously recorded from south of Somaliland.

***Pycnonotus capensis vallombrosæ* (Bp.).**

Ixos vallombrosæ Bonaparte, Comp. Rend. Paris, xlii. 1856, p. 766 : Jaffa.

Pycnonotus xanthopygos palestinae Reichw., 1916 : Jaffa.

Reichenow (Orn. Monats. 1916, p. 181) separated Palestine birds from Asia Minor birds, as being greyer on the upper parts, and as being even greyer than *reichenowi* from southern Arabia. They also differ from typical Asia Minor birds in having the head and throat a purer and deeper black. Under parts greyer, the yellow of the under tail-coverts brighter. Larger than *reichenowi*. Type-locality Jaffa.

Reichenow's name is an absolute synonym of *vallombrosæ*, both type-localities being identical.

There is no doubt that in fresh autumn plumage these differences hold good and the race must be recognized. In

worn breeding plumage it is more difficult to recognize the races of this species.

This race is absent from Damascus and the Lebanon. It is scarce on the Syrian coast at Beyrout, but becomes common farther south at Tyre, Acre, Haifa, and on Mount Carmel. It occurs throughout the Jordan Valley from the Sea of Galilee to the Dead Sea and in the Yarmuk Valley, and is absent from the Judæan highlands though plentiful in the foot-hills and coastal plain south to Gaza. It is also absent from northern Sinai.

MUSCICAPA STRIATA.

***Muscicapa s. striata* (Pall.).**

A male obtained at Damascus on 9. ix. is of this race. All Palestine and Egyptian birds which I have examined are similarly of this race.

In Palestine, birds commence arriving in spring in the middle of April, and nest commonly in the coastal plains and on the Judæan highlands. I never observed them in the Jordan Valley.

In Egypt, spring passage was in full swing up to the middle of May, when it suddenly stopped, the latest record being a single bird on 20. v.

In Kenya Colony, autumn migrants commence arriving in late September or early October, and are plentiful by the middle of that month; most of them remain the winter. On spring passage I noted birds moving on the coast of Tanganyika Territory and on the slopes of Kilimanjaro during the first three weeks in March. My latest spring record is on 28. iii. Mr. Turner, who was on the coast of Kenya Colony during April, never saw a single bird.

***Muscicapa s. neumanni* Poche.**

Two spring migrants obtained at Mombasa on 29. iii. and 30. iii. respectively belong to this race. Also three birds obtained in northern Somaliland (*Archer*) from 23. ix. to 3. x.

[To be continued.]

XXXVI.—*Notes on the Birds of Alcudia, Majorca.*

By Captain P. W. MUNN, F.Z.S., M.B.O.U.

(Plate VIII.)

THE following notes were made during a stay in Majorca, Balearic Islands, from November 1919 until May 1920, and from October 1920 until June 1921.

I chose as my headquarters the Port of Alcudia, a tiny fishing village and port, a mile and a half from the town of that name. Here there was a clean and comfortable little hostel—the “Hotel Marina.” Other parts of the island were also visited as well as Minorca.

Puerto Alcudia (see map, Pl. VIII.) is possibly the most likely spot in Majorca for birds—the shores of the beautiful bay, the pine-woods, the Albufera and marshes, and the crags and cliffs on the peninsula, being apparently ideal localities, and the ever-present quantity of water in the marshes and streams adjacent, besides a lesser area of cultivated land than in other parts, make it more attractive.

The island is, however, a somewhat disappointing place for an ornithologist: there are, certainly, a good many birds, especially on migration, but comparatively few of any great interest, in addition they are unusually wild and shy. Also the strenuous work of climbing the rocky hills, when day after day nothing new or of interest is seen, takes a lot of time with but meagre results. The sandy shores and sand-banks of the bay are ideal for shore- and sea-birds; but of the former only the Kentish Plover is common, of the latter, Gulls are few, and of Terns there are none. The pine-woods and the crags and caverns in the hills are most suitable for birds of prey, but few are present; the cliffs on the sea-coast should teem with sea-bird life, but they are comparatively barren.

The Bay of Alcudia is fringed, most of the way round next the sandy shore, with a belt of sand-dunes of varying width, overgrown with beautiful woods of pine, of no great size as



Map of the North-East part of Majorca

a rule, with a thick undergrowth of juniper, myrtle, rosemary, heather, etc., in places densely bound together with a tangle of *Smilax aspersa*—a tough, thorny creeper, as difficult to get through as barbed wire. Behind the sand-dunes, nearest Puerta Alcudia and to the west of it, is an extent of marshland, covered with spear-grass, samphire, and coarse herbage, among which are several shallow lagoons. Behind this marshland, and farther west, are low hills with woods of splendid pine-trees among them—the outlying spurs of the high mountainous country in the north. Beyond the sweep of the bay is the Albufera—a large tract of swamp, entirely under water, covered with a dense growth of reeds and intersected with numerous canals and streams, which all run into the sea through a large canal nearly in the centre of the bay. An attempt was made many years ago to drain this Albufera, in order to grow rice and cotton, and most elaborate roads, dykes, and pumping-stations were constructed; but the work was relinquished, and most of the dykes and buildings are now neglected and in ruins. A small quantity of rice, however, is still grown in the fringes of the marsh, and a prosperous paper-mill flourishes in the centre, where paper is made from the reeds growing in the marsh. Beyond the Albufera, sand-dunes, pine-woods, and heath-land extend inland as far as Santa Margarita, among which are some fine torrentes; then comes the bare, rocky, scrub-covered country at the foot of the mountains round Artá to Cabo Farruch.

East of Alcudia is the peninsula between the bays of Pollensa and Alcudia—a tract of wild mountainous country, rising to a height of 1500 feet at the Atalaya de Alcudia, with beautiful pine-woods and gorges, bold crags and precipices, and some fine coast scenery, culminating in the Cabo del Pinar—a low pine-covered cape—and the bare, forbidding cliffs of the Cabo de Menorca.

At the western end of the Bay of Pollensa is a smaller marsh, called the Albuferete, which takes all the streams flowing eastwards from the mountains behind Pollensa. The peninsula on the northern shore of Pollensa Bay is a

narrow ridge of mountains, rising to 1300 feet at Fomentor and culminating in the cape of that name.

Cultivated country in this district only extends around the towns of Alcudia and Pollensa, behind the Albuferete, on the slopes of the lower hills of the peninsulas, and also on the northern and western fringes of the Albufera.

In the cultivated country there is a network of narrow lanes shut in with stone walls, and many of these lanes are most picturesque.

The district thoroughly worked and explored is that to the east, and seawards, of a line from Pollensa to La Puebla, thence to Santa Margarita, and on to the neighbourhood of Arta. The observations, I think, may be considered fairly applicable to the greater part of the island, with the exception, perhaps, of the mountainous region of the north; but I found that the results in the mountains were so very meagre compared with the arduous work necessary to accomplish them, that I doubt if it is worth while exploring this northern range thoroughly.

There is a great deal of migration in the island, and during November and April especially there were streams of common migrants.

In the neighbourhood of Palma, numbers of birds are killed and sold in the market for food during the winter. Besides Game-birds, I saw there Thrushes, Redwings, Blackbirds, Starlings, Linnets, Serins, Siskins, Goldfinches, Greenfinches, Chaffinches, Robins; and fewer Fieldfares, Ring-Ouzels, Redstarts, Blackstarts, White Wagtails, Meadow-Pipits, and even Sardinian Warblers, Golderests, Chiffchaffs, and Blackcaps.

The birds, as a rule, sing little and feebly, the Sardinian Warbler and Nightingale being the most noisy, though the Blackbird in the spring chimes in.

I have described rather fully the nests and eggs of some of the birds, as it appears that little collecting of the eggs of Majorcan birds has hitherto been done.

The inhabitants are very friendly and courteous, but do not take much interest in the doings of the foreigner among

them. They have little knowledge of the birds or of the natural history of their district, and are not interested as a rule in natural objects; even the shepherd boys, who spend the whole day in the country with their flocks, take very little notice of the birds around them: little reliance can, therefore, be placed on their statements.

The weather from October 1920 until May 1921 was so abnormally bad and unsettled that the movements of birds, and especially their times of nesting, were most irregular.

There is a small collection of mounted birds in the Instituto Balear in Palma, but this—like that at Mahon in Minorca—is of little value owing to absence of data.

Cultivation in Majorca has of late years so extended, and the character of the island so altered, particularly by the drainage of some of the marshes, that many of the notes of earlier observers are not now applicable. As an instance, a large marsh called El Prat, situated a short distance to the south-east of Palma, has entirely disappeared, and others have been much curtailed by the advance of cultivation around their margins.

A. von Homeyer visited the Balearic Isles in 1861 from the middle of April until the middle of May, and his observations appeared in the '*Journal für Ornithologie*' in 1862 and 1864; many of his statements, however, could only have been from hearsay.

Barcelo wrote in 1866; many of his notes were not from his own observations, and are questionable.

Howard Saunders published in '*The Ibis*' of 1871 (pp. 54-68, 205-225, 384-402), in a list of the Birds of Southern Spain, a number of notes of his observations on the Birds of Majorca.

The Archduke Ludwig Salvador published various volumes between 1869 and 1891 on the Natural History, etc., of Majorca.

The most complete list hitherto published is that by Dr. A. von Jordans in '*Falco*' of 1 August, 1914. He spent March, April, and May, 1913, in the islands, and

species that he did not himself observe he has added on the authority of earlier writers.

Dr. Philip Gosse visited the islands in April 1914 and Mr. H. F. Witherby in June and July 1919, and to both these gentlemen I am indebted for much useful information.

The Rev. F. C. R. Jourdain has kindly furnished me with notes on many of the eggs I have collected.

To my own observations I have added those species that I have not myself observed, with the references to the above earlier writers, but have preferred to omit any statements made by them which at the present time might be misleading.

Minorca is a still more disappointing island for an ornithologist. There is at Port Mahon an interesting museum in the Literary and Scientific Institute, with a collection of birds said to have been obtained in the islands, and catalogued by Senor Ponseti. About five miles from Port Mahon is a series of lakes, called the Albufera, among low scrub-covered hills near the sea, which is the most likely spot for birds that I saw, and where there were, at the end of March 1920, large flocks of Coots, some Mallards, and a few pairs of Tufted Duck. In the centre of the island, between Mercadel and Ferrarias, the hills are higher and more wooded and the country more inviting-looking. Blue Rock-Thrushes were plentiful and said to be resident; *Puffinus kuhli* and *P. yelkouan* * nest on many parts of the coast of the island as well as on the adjacent islets.

From the position of the islands, midway between the coasts of southern Europe and northern Africa, there is every probability that other species besides those already recorded may be observed on passage; and the recesses of the Albufera and other marshes, and the remoter parts of the mountains in Majorca, may yield, perhaps, a few more species during the nesting-season.

* Probably *Puffinus p. mauretanicus* Lowe, Bull. B. O. C. xli. 1921, p. 140.

1. **Corvus corax hispanus.** Raven.

A common resident. A good many nest in the crags of the peninsula of Alcudia, preferring inland situations among the hills to the cliffs of the coast. Several pairs sometimes nest in the same neighbourhood; in one gorge on 22 March, 1920, I found two nests on bluffs about 100 yards apart, one of which contained young ones, and on the other the bird was sitting and refused to move. The first nest was on an open shelf of rock and the other in a small cavern, and though not easily accessible, both nests could be seen into from the adjoining hillsides. In 1921 one only of these nests was occupied. In another range of cliffs three pairs were nesting not far from each other. They frequently associate in the winter in considerable flocks, and I have seen assemblies of from twenty to fifty individuals attracted by some common food.

Obtained by v. Jordans, who distinguishes this subspecies from *C. c. tingitanus* and *C. c. sardus*.

2. **Corvus corone.** Carrion-Crow.

3. **Corvus cornix.** Hooded Crow.

Included in v. Jordans' list; but though both these species may occur on migration (and Gosse thought he saw a Carrion-Crow in 1914), no specimen has yet been obtained, nor have they been found to nest in the island.

4. **Corvus frugilegus.** Rook.

Included by v. Jordans on Barcelo's authority. I have never seen this species in the island, but Gosse has noticed it. There is no reason why it should not occur on passage.

5. **Pyrrhocorax pyrrhocorax.** Chough.

Included by v. Jordans on the authority of Barcelo.

6. **Sturnus vulgaris.** Starling.

Starlings only frequent the district in the winter and early spring. In 1919-20 a few small parties frequented Albufera and neighbourhood up to the middle of March, but in 1920-21 vast flocks were found in many parts of the island. It is included in v. Jordans' list.

7. **Sturnus unicolor.** Sardinian Starling.

Included in v. Jordans' list on the authority of Barcelo, Howard Saunders, and the Archduke Ludwig Salvador.

8. **Oriolus oriolus.** Golden Oriole.

A visitor in small numbers in the summer, when a few probably remain to nest. I saw a male on 24 April, 1921, near Puerto Alcudia.

Observed by v. Jordans.

9. **Chloris c. aurantiiventris.** Greenfinch.

Resident and common. They commence laying about the middle of April, nests being built chiefly in pines and wild olive-trees. Both nests and eggs are similar to those of the British race, though the eggs are usually somewhat smaller.

Obtained by v. Jordans, who states it is nowhere plentiful.

10. **Coccothraustes coccothraustes.** Hawfinch.

Not observed by v. Jordans, who quotes Barcelo and Homeyer, but he saw a stuffed specimen in Arta obtained in 1912.

11. **Carduelis carduelis africana.** Goldfinch.

One of the commonest birds all the year round, and the species most frequently kept in cages. They find abundant food in the thistles and weeds that flourish everywhere. Nesting plentifully in the pine-woods, in the orchards, and in the wild olive-trees on the hillsides. Often their nests are built in the curtains of *Smilax aspersa*, which forms such impenetrable barriers in some parts of the woods. The earliest eggs are laid about the middle of April, and the nests are the usual beautiful structures of lichen, moss, and fine twigs outside, thickly lined with vegetable down, a few feathers, and a little palmeto fibre closely felted together. The birds always show considerable excitement at their nest and sit very closely on their eggs.

Included in v. Jordans' list under the name of *Carduelis c. parva*. Witherby considers those obtained by him to be referable to *C. c. africana*.

12. *Spinus spinus*. Siskin.

Common during the winter in considerable flocks, but apparently none remain to breed.

Von Jordans quotes Barcelo in his list.

13. *Spinus citrinella*. Citril Finch.

Von Jordans includes this species on the authority of Barcelo.

14. *Serinus serinus*. Serin.

A common species throughout the year, assembling in flocks in the winter. They resort to the pine-woods and orchards for nesting early in April, and I found a nest containing tiny young ones on 26 April, 1920, and on the same day another nest which the birds were building. The nest is usually placed in the first fork of a small pine, and is a most beautiful little structure of twigs and moss, thickly lined with feathers.

Obtained by v. Jordans.

15. *Passer domesticus*. House-Sparrow.

A common resident, but at present not very abundant, though, owing to increased cultivation, it is annually becoming more plentiful. A good many nest in the rocky sides of a ruined subterranean chapel out in the open country near Alcudia, at some distance from dwellings.

Obtained by v. Jordans. Witherby found many breeding in a cliff near Lluch.

16. *Passer italiae*. Italian Sparrow.

Included in v. Jordans' list on the authority of Homeyer, but its occurrence is very doubtful.

17. *Passer montanus*. Tree-Sparrow.

Von Jordans includes this species on the authority of Barcelo and others, but I have never yet observed it.

18. *Fringilla cœlebs*. Chaffinch.

Extremely plentiful all the year. Numbers nest in the pine-woods, in the orchards, and, less plentifully, among the hills. They commence building early in April. The song is harsh and feeble.

19. **Fringilla montifringilla.** Brambling.

Von Jordans includes this species on the authority of Barcelo, and says it has occurred in hard winters.

20. **Petronia petronia.** Rock-Sparrow.

Von Jordans obtained specimens.

21. **Acanthis cannabina mediterranea.** Linnet.

Very common all the year, and abounds in large flocks during the winter, many of which are not dispersed even in May. They build in much the same situation as at home, chiefly in bushes and hedges, but also in pine-trees. The first eggs were taken on 25 April, 1920, but they are rather late breeders.

Obtained by v. Jordans.

22. **Acanthis linaria cabaret.** Lesser Redpoll.

Included in v. Jordans' list on the authority of Barcelo.

23. **Loxia curvirostra balearica.** Crossbill.

I found Crossbills were present wherever pine-woods abounded in any extent, and they were by no means uncommon. I sought them chiefly in the pine-woods on the shore, as the trees were smaller there; but they were found equally in the woods among the hills, where the trees were of considerable size, and there were always some about among the woods surrounding Bellver Castle at Palma.

They are comparatively tame birds, and not easily disturbed either when feeding or at their nests, and often remain perched quietly overhead in a tree while one passes beneath; but when thoroughly alarmed, they fly away to a considerable distance. A cock bird may frequently be seen perched conspicuously on the topmost spray of a pine-tree, chirping loudly to his partner or to the rest of his party feeding among the boughs of the trees near by; or the whole party may be feeding amicably together, chattering pleasantly all the time. When pairing they sometimes indulge in unseemly squabbles among the pines like sparrows, and make nearly as much noise about it.

They are extremely fond of bathing, and I have watched

them washing themselves in the pools around the lagoons near Alcudia, and in the water-courses in the hills, when they so thoroughly soak themselves that they can only fly as far as the nearest tree to dry and preen their feathers.

In 1919 they had paired in the beginning of December, and some were evidently building in January 1920, but I did not find a completed nest until 1 April, 1920, and this contained four fresh eggs. The female did not leave the nest until the tree was struck, and the pair flew closely around, chirping vigorously while the tree was being climbed. It was built in a fork of a lateral branch of a small pine—a similar position to all other nests I found,—and was a platform of pine twigs on which was a compact cup of grass, fibre, and a little hair. The eggs were white, rather faintly spotted with different shades of brown, one specimen hardly showing any markings at all.

On the same day I found three other nests being built in exactly similar positions, at each of which was its pair of birds; but on 10 April I found a nest from which the young had flown some weeks before, and on 26 April a female with two fully-grown ones was seen feeding quite tamely, low down among the small pines. Crossbills had evidently nested in the district the preceding year, judging by the number of old nests which were found.

The eggs of this subspecies have not been taken before.

During the extremely wet and unsettled winter of 1920–21, Crossbills did not appear in the district until the beginning of January 1921, nor did I see any in other parts of the island until then. They then appeared in numbers, and were as plentiful as usual in all suitable localities, and commenced pairing immediately. The natives say that in bad winters they go to Africa.

Obtained by v. Jordans.

24. *Emberiza calandra*. Corn-Bunting.

A resident, but not very plentiful; a considerable increase in its numbers takes place from the end of January, but it is generally noticed singly or in pairs. I took a nest with

five eggs on 4 May, 1921, built at the foot of a small pine in the woods near the shore among herbage ; and this appears to be the usual situation.

Obtained by v. Jordans.

25. **Emberiza cirius.** Girl Bunting.

A resident, universally distributed but nowhere plentiful. Obtained by v. Jordans.

26. **Emberiza hortulana.** Ortolan Bunting.

Obtained by v. Jordans.

27. **Emberiza palustris.** Reed-Bunting.

A Reed-Bunting is common during the winter in suitable localities, and a few remain throughout the year. Hitherto I had considered them to be typical Reed-Buntings, but Witherby informs me that a male I obtained on 25 March, 1921, is a form of *E. palustris*, but is not referable to any known subspecies, and until more specimens are obtained it must remain uncertain what form inhabits the island.

Von Jordans did not observe it, but includes it in his list on the authority of Barcelo under the name of *E. scheniclus*.

28. **Alda arvensis.** Sky-Lark.

Common during the winter, and a few probably remain throughout the year. On 26 February, 1920, when on a ship some distance off the north coast of the island, I saw one flying northwards.

Not observed by v. Jordans, who quotes Barcelo.

29. **Lullula arborea.** Wood-Lark.

First noticed in the middle of April, so probably it is a summer visitor only, but it is not plentiful.

Not observed by v. Jordans, who quotes Barcelo.

30. **Alda duponti.** Dupont's Lark.

Von Jordans makes some remarks on this species in his list, but there is no record of its occurrence in the island.

31. *Galerida theklæ theklæ*. Crested Lark.

Generally distributed throughout the district, but in no great quantities. It is to be found in the pine-woods near the shore, on the bare, rocky hillsides, among the olive orchards, on the open fields, and even among the rocks on the seashore. A nest with two eggs was taken on 29 April, 1920, on rough, rocky ground on a hillside.

Obtained by v. Jordans. Witherby considers that those he obtained in Majorca do not differ from the typical form, but the Iviza bird (*G. t. polutzecki*) appears to have a finer bill.

32. *Calandrella brachydactyla*. Short-toed Lark.

The Short-toed Lark is very plentiful in the marshes and fields close to Puerto Alcudia from the beginning of April. A nest with three eggs was found on 24 April, 1920, in the marshes on a dry spot among short herbage—a beautiful little cup-shaped hollow, sunk deeply in the ground, thinly lined with grass and a little seaweed. Other nests found had been destroyed by the sheep and goats, or rooted up by the pigs which feed in the marshes.

Obtained by v. Jordans.

33. *Motacilla alba*. White Wagtail.

Very common during the winter, following the plough, feeding on the fields and roads and in the marshes. The majority leave in April, but one or two pairs remain in the district in the summer and possibly breed there.

Obtained by v. Jordans.

34. *Motacilla cinerea*. Grey Wagtail.

A common species during the winter in the marshes and wherever water is to be found; but as most of the water-courses in the hills are dry in the summer, I do not think any remain to nest unless the winter has been a wet one. Even in the Albufera, where there is always plenty of water, none were seen after early spring.

Some young ones were seen in the cloisters of the cathedral at Barcelona on 11 May, 1920.

35. **Motacilla flava flava.** Blue-headed Wagtail.

One of the commonest and most conspicuous of the summer visitors. The earliest one was noticed on 8 March, 1921, and ten days later they had arrived in numbers. The male birds, perched on the tops of spear-grass and samphire, are as brilliant and noticeable as Bee-eaters. The first nest was found with two eggs on 6 April, 1920, in a damp spot in the marshes under a tuft of samphire. Other nests were found among grass in drier parts of the marshes, and the birds also nested among the pine-woods on the shore. A great many nests are destroyed by the cattle in the open, and the birds may be seen flying distractedly around the sheep and goats in their nesting-haunts; hence they are driven to nest among the pines for greater security.

Obtained by v. Jordans.

36. **Motacilla flava borealis.** Grey-headed Wagtail.

Obtained by v. Jordans.

37. **Anthus pratensis.** Meadow-Pipit.

A very common bird in the marshes and fields during the winter; a few remain during the early summer, but I did not discover that they were nesting.

Obtained by v. Jordans.

38. **Anthus trivialis.**

I did not notice any Tree-Pipits, but Dr. Gosse saw one at Alcudia in April 1914, and v. Jordans obtained the species.

39. **Anthus campestris.** Tawny Pipit.

A common summer visitor, the earliest being noted on 27 March, 1921; but the majority arrive in the middle of April. They are late breeders.

Obtained by v. Jordans.

40. **Certhia brachydactyla.** Tree-Creeper.

41. **Sitta cæsia.** Nuthatch.

Though v. Jordans has included these species in his list with Barcelo's remarks, they might well be omitted, as there is no record of their occurrence by any modern observer.

42. *Regulus r. regulus*. Golderest.

Common during the winter and particularly numerous in November, but leaves the district entirely in the spring. They were plentiful in the pine-woods on the shore and among the hills, even up to the limit of the tree-growth on the wind-swept Cabo de Menorca. As tame and confiding a little bird as in other countries, and this is remarkable in Majorca, where the birds are usually shy and wild. One obtained by me is considered by Witherby to be of the typical form.

Von Jordans did not observe this species, but quotes Barcelo.

43. *Regulus ignicapillus*. Firecrest.

Not at all uncommon during the winter in similar localities to the Golderest, but it is a much shyer and more restless bird, whose habits more resemble Chiffchaffs or Willow-Wrens. I usually noticed them in pairs.

Included in v. Jordans' list.

44. *Parus major*. Great Titmouse.

A resident, universally distributed but not common. A nest was found on 30 April, 1920, in a hole in an olive-tree, with five fresh eggs; both the eggs and nest were exactly similar to the British species, and I was unable to detect any difference either in the note or habits of the bird.

Von Jordans includes this in his list under the name *P. m. mallorce* Jordans, but Witherby thinks the bird cannot be distinguished from *P. m. aphrodite*.

45. *Parus ater*. Coal-Titmouse.

Von Jordans includes this species in his list with Barcelo's remarks; it might well be omitted.

46. *Parus cæruleus*. Blue Titmouse.

Von Jordans obtained specimens of the Blue Titmouse and named it *P. c. balearicus*. Witherby also noticed it; but it cannot be as universally distributed as the Great Tit, for I have not yet come across it anywhere.

47. **Lanius senator.** Woodchat.

Von Jordans obtained specimens.

48. **Lanius senator badius.** Corsican Woodchat.

A common and conspicuous summer visitor, whose extraordinary variety of notes is most confusing to the naturalist. The earliest arrival was noticed on 30 March, 1921, but one of their "larders" was found on 1 April, 1920—several beetles and other insects impaled on the thorns of a pomegranate bush on the edge of the Albufera. The first nest was taken on 26 April, 1920, and these were invariably built among the ends of the lower branches of small pine-trees. Two nests I found in a row of scattered pine-trees near the shore were not 100 yards apart. There is little attempt at concealment, and the bird sits closely. The nests are bulky, strongly-made structures, composed externally of pieces of an aromatic plant with the yellow blossoms attached, and lined with grass, cotton-grass blossoms, a few feathers, and odds and ends of paper, fibre, etc. Five handsome evenly-marked eggs are usually laid, of a pale greyish-white ground-colour zoned with brown, and grey blotches and spots of varying shades at the larger end. I only noticed this species on the low ground; it did not appear to frequent the hills.

Obtained by v. Jordans.

49. **Lanius meridionalis.** Southern Great Grey Shrike.

Von Jordans includes this in his list on the strength of a specimen in the Instituto Balear in Palma.

50. **Sylvia communis.** Whitethroat.

A summer visitor, arriving in April, but not common.

Obtained by v. Jordans.

51. **Sylvia curruca.** Lesser Whitethroat.

Gosse observed a specimen at Alcudia on 7 April, 1914.

52. **Sylvia simplex.** Garden-Warbler.

A summer visitor, but not common. I saw the first on 19 March, 1920.

Not observed by v. Jordans, who quotes Homeyer.

53. *Sylvia atricapilla*. Blackcap.

A summer visitor and common, the greater number arriving in April, but in 1921 there was a considerable immigration at the beginning of March. A few remain throughout the winter. They haunt the gardens and orchards and nest in the bramble and myrtle-brakes among the gorges of the pine-woods in the hills.

Obtained by v. Jordans.

54. *Sylvia melanocephala*. Sardinian Warbler.

One of the commonest birds; found everywhere all the year round, and where no other bird is to be seen, the Black-headed Warbler is sure to be there—even among the sparse palmetto-scrub on the tops of the bare hills, or the few scattered clumps of pines growing in inaccessible spots among the crags, as well as in orchards, gardens, and pine-woods. They nest abundantly in every conceivable situation, but always low down, their favourite spots being dense clumps of butcher's broom, myrtle-thickets, palmetto-scrub, brambles, and roadside bushes. Often the same site is resorted to annually, but damp or marshy situations are not favoured. Their nests vary considerably, some being neat, compact structures, and others bulky and rather untidy; all are made of grass externally, with invariably a pad of cotton-grass blossoms or vegetable down of some kind, in which the lining of fine grass or fibre is set. The eggs also vary much, the commonest type having a pale greenish ground, with greyish specks of various shades. A very handsome type has a whitish ground, with spots or blotches of dark red, or purple or brown—in fact, without identifying the birds, these handsome eggs might belong to another species. There is never any difficulty in being able to identify the birds, however, as they are always in evidence near their nest and sit closely, the male taking his turn with the female; when the young are hatched the parent birds make a curious “purring” noise, something like the subdued chatter of a Wren or the “churring” of a distant Nightjar. The usual number of eggs laid is three or four, and more

often than not one of the eggs remain unhatched, which accounts for the number of old nests found with one bad egg. The first eggs were found on 4 April, 1920, and though unfinished nests were met with at the end of April, in others the young were nearly ready to fly at the beginning of May.

Obtained by v. Jordans.

55. *Sylvia cantillans*. Sub-Alpine Warbler.

Von Jordans obtained a specimen.

56. *Sylvia orphea*. Orphean Warbler.

A summer visitor, arriving at the end of March or beginning of April, but not common. They chiefly frequent the pine-woods near the shore, where they feed quietly among the upper branches. I have found old nests in the forks of the smaller pine-trees.

Von Jordans remarks on a note of Barcelo's concerning this species.

57. *Melizophilus undatus*. Dartford Warbler.

Von Jordans obtained a specimen.

58. *Sylvia sarda balearica*. Marmora's Warbler.

Specimens have been obtained by v. Jordans and Witherby. Both the above are resident, and though I have not yet obtained examples, I have observed them both in winter and summer. They are occasionally for sale in the market in Palma.

59. *Cettia cetti*. Cetti's Warbler.

Obtained by v. Jordans and noticed by Witherby. Von Jordans separates it under the name *C. c. salvatoris*.

60. *Acrocephalus streperus*. Reed-Warbler.

An abundant resident in the Albufera, where it breeds, not only in the marsh itself, but in the ditches and hedges adjoining. Owing to the chorus of croaking frogs in the spring and summer in the Albufera, it is not easy to trace birds by their notes, but the Reed-Warbler's songs can be

distinguished, especially when they are pairing early in the spring.

It is remarkable that this species has not been before recorded from Majorca, considering its abundance in suitable localities.

61. *Acrocephalus arundinaceus*. Great Reed-Warbler.

Von Jordans quotes Homeyer and Barcelo for the occurrence of this species.

62. *Acrocephalus schœnobæus*. Sedge-Warbler.

Occurs in the Albufera, but I did not notice any before the middle of March.

63. *Acrocephalus aquaticus*. Aquatic Warbler.

Noted as occurring in the Albufera during the winter, but I have no record of any seen in the summer.

64. *Luscinola m. melanopogon*. Moustached Warbler.

A plentiful resident in the Albufera, where its song is heard on all sides, commencing with a loud note, very like a Redshank's, and continuing with a song not unlike a Sedge-Warbler's.

This species has not before been recorded from Majorca. Witherby, who has examined examples obtained by me, states that they do not differ from the typical form.

65. *Phylloscopus trochilus*. Willow-Warbler.

66. *Phylloscopus sibilatrix*. Wood-Warbler.

Both species noted during the winter, but all leave the district in the spring.

67. *Phylloscopus collybita*. Chiffchaff.

Chiffchaffs swarm in the district during the winter—in the orchards, among the cabbage crops, in the pine-woods; and on the sunny outskirts of the pine-woods on the shore they flit about in small parties. All, however, leave the district at the beginning of March.

One found its way into a lobster-pot lying on the quay at Puerto Alcudia, and was captured.

These birds are known to the natives as "birds of the snow," because in cold weather they often come into the houses.

Von Jordans obtained specimens of the three above-named species.

68. *Phylloscopus bonelli*. Bonelli's Warbler.

Included in v. Jordans' list on the authority of Homeyer and Barcelo.

69. *Cisticola c. cisticola*. Fantail Warbler.

A common resident species, very plentiful in winter but not quite so abundant during the summer. They commence nesting at the end of March and beginning of April, and the nests, carefully concealed among grass, samphire, or spear grass, are deep pockets of cobwebs, down, etc., like the web of some insect.

I have found two types of egg—one pure white, the other pale blue. The Majorcan name for this bird is "Ooyec de Bau," meaning "eye of an ox."

Obtained by v. Jordans.

70. *Turdus viscivorus*. Missel-Thrush.

Not uncommon during the winter, frequenting the old olive orchards and scattered trees on the hillsides.

Not observed by v. Jordans, who quotes Barcelo.

71. *Turdus philomelus*. Song-Thrush.

Very abundant during the winter and universally distributed, but after the beginning of April very few are left in the district, and apparently none remain to breed. Great numbers are killed for food and sold in the markets, with Redwings and Blackbirds and a few Fieldfares and Ring-Ouzels, and an occasional Blue Rock-Thrush.

Von Jordans noticed a specimen in May in Cabrera.

72. *Turdus musicus*. Redwing.

Plentiful during the winter, and, like the Fieldfares, they frequent the old olive orchards and trees on the scrub-covered hillsides.

Included in v. Jordans' list on the authority of Barcelo and a stuffed specimen in Palma.

73. *Turdus pilaris*. Fieldfare.

Not so numerous as the Redwing, but still not uncommon in the winter.

In v. Jordans' list, Barcelo is the authority given for its occurrence.

74. *Turdus merula*. Blackbird.

Very common, universally distributed, and resident, but unusually shy and wary. They commence nesting early in March, and the nest is frequently placed in the fork of a pine-tree, also in bushes and among brambles; in creepers against the trunk of a tree is a favourite situation. The nests are usually rather small, and seaweed is often used in their construction. Three eggs are most often laid, but four is not unusual. I found young ones hatched on 23 April, 1920. The shepherd-boys catch them, with thrushes, in traps constructed like our brick-traps, but of pieces of stone and baited with berries. The song is rather weak, and on the whole they sing very little. In May 1921 I found a nest on the ground, among herbage, that contained eggs.

Obtained by v. Jordans.

75. *Turdus torquatus*. Ring-Ouzel.

A winter visitor, but not very common, frequenting the wooded gorges in the hills and the scrub-covered hillsides near the seashore.

Von Jordans quotes Barcelo as the authority for its occurrence, and noted stuffed specimens in Palma.

76. *Monticola cyanus*. Blue Rock-Thrush.

Rock-Thrushes had arrived in numbers by 22 March, 1920, and were not uncommon in the wild rocky gorges among the hills. An old nest was found in a crevice of a rock near the Atalaya de Alcudia. A few remain throughout the winter.

Obtained by v. Jordans.

77. *Monticola saxatilis*. Rock-Thrush.

I did not certainly identify this species, but on 3 April, 1920, saw a bird which I think must have been a Rock-Thrush, in a bare, rocky gorge, flying upwards into the air from its perch on a ridge of rocks, uttering its song, and returning again to the same place.

Obtained by v. Jordans.

78. *Phoenicurus phoenicurus*. Redstart.

Plentiful during the winter, chiefly in the orchards, but few noticed later than March. In April 1921 many adult males passed through the district. Some probably remain to breed.

Obtained by v. Jordans.

79. *Phoenicurus gibraltariensis*. Black Redstart.

Not at all uncommon during the winter, but all had left in March. Adult males occur chiefly in the spring.

Obtained by v. Jordans.

80. *Erithacus r. rubecula*. Redbreast.

Very common and universally distributed during the winter. Arriving with the Song-Thrushes in October and leaving with them in April. I think it possible that a few remain to breed. Many are sold in Palma market, with other small birds, for food, and on their arrival in October they are always very fat.

Observed by v. Jordans. Witherby states that specimens obtained in October and April belong to the typical form.

81. *Luscinia megarhyncha*. Nightingale.

Arrives in the district at the beginning of April, and is very common. It is practically the only bird that sings fearlessly, and may be heard day and night in the plantations, patches of bush, and among the pine-wood and also in gardens. They nest in April and May in myrtle and bramble-brakes, as well as in clumps of palmetto, and are particularly fond of the thickly-wooded gorges among the hills.

Observed by v. Jordans.

82. *Cyanosylvia suecica cyanecula*. White-spotted Blue-throat.

Observed by v. Jordans.

83. *Saxicola rubicola*. Stonechat.

A very common resident, and one of the most noticeable birds everywhere. They nest early in March, hard-set eggs being found on 18 March, 1920, and young ones seen flying on 19 April. Nests in the marshes are usually built under a tuft of samphire or low down in a bush, but they also build in the pine-woods on the shore. Seaweed is often used in the construction of their nests, and palmetto-fibre chiefly as a lining. The eggs are usually rather smaller than British specimens.

Observed by v. Jordans. Witherby states that specimens obtained by Gosse are of the Continental form *S. r. rubicola*.

84. *Saxicola rubetra*. Whinchat.

A summer visitor, arriving at the beginning of April, but not very common.

Obtained by v. Jordans.

85. *Ænanthe ænanthe*. Wheatear.

A common bird on passage, both in spring and autumn, and remaining for some weeks in the district at both seasons. A few stragglers occur during the winter, and possibly some remain to breed, for I found an old nest in a rabbit-burrow, near Puerto Alcudia, in 1921.

86. *Ænanthe æ. leucorrhoa*. Greenland Wheatear.

Obtained by v. Jordans and by Gosse.

87. *Ænanthe hispanica*. Black-eared Wheatear.

A specimen was seen near Puerto Alcudia on 12 April, 1921, evidently on migration.

Obtained by v. Jordans.

88. *Accentor modularis*. Hedge-Sparrow.

Scarce; a few examples have been observed during the winter only, in the pine-woods on the shore and among the hills.

Obtained by v. Jordans.

89. *Troglodytes t. kabyloorum*. Wren.

Not very common, and extremely shy. It is a resident, and its numbers do not seem to vary at all with the seasons. They are generally found in the pine-woods near the shore, and among the mountains, and more rarely among scrub on the hillsides, in rocky gorges, and even on the desolate Cabo del Pinar. Their nests are usually built quite near the ground, among dense undergrowth against the trunk of a pine-tree, in juniper and rosemary bushes, frequently in clumps of palmetto and dense smilax thickets, and rarely in clefts of the rocks. They are composed of moss, with often a lot of seaweed, or the dry leaves of a very prickly thistle, outside, lined with feathers and hair or palmetto-fibre. I found one nest lined thickly with feathers taken from the carcass of a Barn-Owl lying near. The eggs are white, with red spots of more or less intense colouring, but are generally smaller than those of the British species.

Obtained by v. Jordans, and Witherby considers that specimens he obtained belong to this form.

90. *Muscicapa striata*. Spotted Flycatcher.

A common summer visitor, arriving in the latter part of April. They frequent chiefly the pine-woods among the hills, as well as the olive orchards, and though these woodland birds are usually shy, those which frequent the vicinity of houses become as tame and familiar as at home, and frequently build their nests in sheds, outhouses, and even in the houses themselves.

Obtained by v. Jordans, who has named the bird *M. s. balearica*.

91. *Muscicapa hypoleuca*. Pied Flycatcher.

Obtained by v. Jordans.

92. *Muscicapa collaris*. White-collared Flycatcher.

Included in v. Jordans' list on the authority of Barcelo.

93. *Hirundo rustica*. Swallow.

Fairly plentiful in summer; the earliest arrivals were

noted at the end of February, but the majority arrive in March. A few stragglers occur during the winter.

Obtained by v. Jordans.

94. *Delichon urbica*. Martin.

Fairly common in summer, arriving early in April, but in by no means in such great numbers as in parts of the Spanish mainland.

Obtained by v. Jordans.

95. *Riparia riparia*. Sand-Martin.

A summer visitor, arriving in April, but local and not very numerous. There are a few small colonies at suitable spots in the island, and odd pairs are found among the sand-hills on the shore of Alcudia Bay.

Obtained by v. Jordans.

96. *Riparia rupestris*. Rock-Martin.

Obtained by v. Jordans and Witherby.

97. *Iynx torquilla*. Wryneck.

A resident, but not plentiful. Their numbers are considerably increased by migrants in April.

Obtained by v. Jordans.

98. *Cuculus canorus*. Cuckoo.

A summer visitor, not very plentiful, arriving in March or in backward seasons in April. On warm spring nights Cuckoos may be heard calling from the hills behind Puerto Alcudia, Nightingales singing and Stone-Curlews clamouring from across the bay, while Bitterns "boom" continually in the Albufera.

Obtained by v. Jordans.

99. *Micropus apus*. Swift.

Swifts arrive early in April, and career in hundreds over Palma and less numerous over the smaller towns. The earliest date I have noticed them was while crossing from Minorca to Majorca on 29 March, 1920, and several were over the Albufera on 1 April of that year.

Included in v. Jordans' list.

100. *Micropus melba*. Alpine Swift.

I saw several of this species in the company of common Swifts, flying over the Albufera on 1 April, 1920, and they appeared to be making for the mountains in the north of the island.

Observed by v. Jordans.

101. *Micropus murinus illyricus*. Mouse-coloured Swift.

Obtained by v. Jordans and Witherby. Probably breeds; but among the hundreds of *M. apus* seen at Palma and in other places I have not yet observed this species.

102. *Caprimulgus europæus*. Nightjar.

A summer visitor, arriving at the beginning of May, but not very common. Whilst standing on the balcony of the inn at Puerto Alcudia in the evening of 11 May, 1921, one of these birds swept close past me up the village quay. I flushed a pair in the woods near San Luis on 13 May, 1921, and a single bird in the pine-woods on the shore on 21 May, 1921. One was caught in some fishing-nets, in the summer of 1920, hung up to dry in Puerto Alcudia; the species has also been noticed near Palma.

Included in v. Jordans' list on Barcelo's authority, and from a stuffed specimen seen in Arta.

103. *Merops apiaster*. Bee-eater.

To anyone acquainted with the summer birds of Spain, the merry Bee-eaters are the most noticeable absentees from Majorca. I have only seen one party, which was migrating northwards, on 26 April, 1920, above the pine-woods near the shore of Alcudia Bay. I have looked for them in vain in other parts of the island, but have seen no others, so conclude they do not stay in Majorca and are only stragglers on migration.

Von Jordans obtained a specimen that had been shot near Arta in 1912, and quotes Homeyer and Barcelo as authorities for its occurrence.

104. *Upupa epops*. Hoopoe.

A summer visitor, arriving in March and April, and though numbers pass through the district on migration, only a small proportion remain to nest. A few stay throughout the winter.

Found nesting by v. Jordans.

105. *Alcedo ispida*. Kingfisher.

A common winter visitor in suitable localities, but all leave the district in the spring. Plentiful in the Albufera and on the adjacent streams, and I have seen them fishing in the tanks in which water is stored from the water-wheels for irrigation, as well as on the sea-coast.

Included in v. Jordans' list on Barcelo's authority.

106. *Coracias garrulus*. Roller.

Included in v. Jordans' list on Barcelo's authority.

107. *Tyto alba*. Barn-Owl.

Occurs sparingly in the district. I found two dead specimens in the pine-woods on the shores of Alcudia Bay in April 1920, from one of which a Wren had taken feathers to line its nest.

On 4 May, 1921, I flushed one from a small pine in the wood, but I know of no possible nesting-place anywhere near. A pair inhabit the tower of Alcudia Church, and are said to drink the olive-oil from the lamps on the shrines; hence their native name "Oliva" (olive). This species has also been observed in the neighbourhood of Palma.

Von Jordans obtained this species.

108. *Asio otus*. Long-eared Owl.109. *Asio accipitrinus*. Short-eared Owl.110. *Strix aluco*. Tawny Owl.

Von Jordans includes the above three species in his list, but they might well be omitted, as there is no recent record of their occurrence in the island, and Barcelo's notes on these species are questionable.

111. Otus scops. Scops Owl.

Not uncommon. Its monotonous piping note may be heard at night in most parts of the district, and indeed in most parts of the island, even throughout the winter. I have frequently flushed them from the shelter of some tree or ruined building, and found one that had been killed by a cat outside the walls of Alcudia.

Included in v. Jordans' list.

112. Carine noctua. Little Owl.

I have never seen this species, but have heard its cry in the neighbourhood of Puerto Alcudia, where one individual took up its quarters during the autumn of 1920.

Included in v. Jordans' list.

113. Vultur monachus. Black Vulture.

The Black Vulture is numerous and resident in all the mountainous parts of Majorca, and it is a mystery how these great birds find sufficient food ; no doubt they do not live entirely on carrion—sickly sheep or young lambs are not allowed to die natural deaths in the hills where these vultures are numerous. I know of one instance at the Cabo de Menorca when five vultures were driven away from a dying lamb by some fishermen, who secured the lamb and took it home. Two pairs and an odd bird of this species inhabited the hills around the Atalaya de Alcudia, and were seen almost daily going round their regular beats over the hillsides, the Albufera and marshes, and the pine-woods on the shore. A favourite perch was the ruined watch-tower on the summit of the highest peak. On 14 January, 1920, I watched one of these pairs mating ; and at the end of March both pairs had taken up their nesting-quarters in the crags, one pair having selected a cavern in a precipice immediately above the Cabo del Pinar, and the other pair a ledge in the sheer rock directly beneath the Atalaya—about a mile and a half apart. The odd bird—a young one—had disappeared. On the Pollensa peninsula they are particularly numerous—perhaps the numbers of feral goats there attract them ; and one day I saw no less than twelve overhead there.

They invariably discovered me when picnicking among the hills, and circled closely around, eyeing me hungrily. Nor do they confine themselves for nesting entirely to the higher hills; rocky hills of quite low elevation, provided there are sufficient caverns in them, are often frequented. I climbed one day into a cavern in one such low and easily accessible hill, when a Black Vulture swept out and nearly knocked me down the hillside.

Observed by v. Jordans.

114. *Gyps fulvus*. Griffon Vulture.

Von Jordans includes this species on the authority of the Archduke Ludwig Salvador, but I have never come across it in the district. In May 1920 at Lerida, in Catalonia, I saw one that was much concerned with an aeroplane above the town, and followed it about with interest.

115. *Neophron percnopterus*. Egyptian Vulture.

This is a resident species, but not common. Only one pair inhabited the Alcudia district, and had their quarters, in 1920, in the crags around the Atalaya de Alcudia, frequently visiting the Port and marshes in search of food. In 1921 they appeared to have shifted their quarters to the rocky hills on the west side of Alcudia Bay, and a favourite perch of theirs was the sea-mark—a pillar of stone—on the sea-shore near the Port.

Observed by v. Jordans.

116. *Circus æruginosus*. Marsh-Harrier.

A common resident in the Albufera and less so in the Albuferete. They nest among the dense reed-beds in these marshes.

Observed by v. Jordans.

117. *Circus cyaneus*. Hen-Harrier.

Included by v. Jordans, who observed a pair near Lluch.

118. *Circus pygargus*. Montagu's Harrier.

Von Jordans obtained a specimen.

119. **Buteo buteo.** Buzzard.

Seen on a few occasions, more often in the neighbourhood of Pollensa, in the winter, but becoming commoner in April; probably these latter were migrants.

Not observed by v. Jordans.

120. **Aquila chrysaëtus.** Golden Eagle.

I have frequently seen large Eagles during the winter, which were probably of this species, among the crags of the Alcudia peninsula and over the Albufera and lagoons—those visiting the Albufera came from the mountains in the north. I saw one fiercely attacked by a Raven, which even pitched on the Eagle's back and did not cease its attacks while they remained in sight. On 7 March, 1921, I had a near view of one hunting along a hillside; it eventually perched on a rock, where it remained some time at no great distance from me.

Observed by v. Jordans.

121. **Aquila adalberti.** White-shouldered Eagle.

I saw a large, dark, White-shouldered Eagle over the Albufera on 20 November, 1919, being pursued by a Herring-Gull.

122. **Haliaëtus albicilla.** White-tailed Eagle.

Von Jordans includes this species in his list on the authority of Homeyer and Howard Saunders.

123. **Nisaëtus fasciatus.** Bonelli's Eagle.

A pair inhabit the crags and cliffs of the Alcudia peninsula, and the Cabo de Menorca.

Witherby found a pair nesting near Lluch in 1919.

124. **Nisaëtus pennatus.** Booted Eagle.

This species is a resident, but occurs sparingly. I saw one several times in December 1919, in a piece of fine old pine-forest near the Playa de Muro in Alcudia Bay. During the autumn and winter of 1920–21 and spring and summer of 1921 they were frequently seen about the San Luis woods

and even over the Port of Alcudia, and also in the neighbourhood of Pollensa.

Included in v. Jordans' list on Barcelo's authority.

125. *Accipiter nisus*. Sparrow-Hawk.

I saw a specimen on 29 December, 1919, in the pine-woods near the Cabo de Menorca, chasing a Thrush; and another on 18 March, 1921, in the pine-woods on the shore of Alcudia Bay.

Observed by v. Jordans.

126. *Milvus milvus*. Kite.

Two pairs only inhabit the immediate vicinity of Alcudia, and one or other of them visited the harbour and marshes almost daily in search of food, and often snatched up refuse from the surface of the water to devour on the wing. One pair had apparently made their home in the woods among the hills to the west of Puerto Alcudia, and the other pair near the "Victoria" on Pollensa Bay. I was unable to find their nests in any of the trees, and am inclined to think they were nesting in the crags; for on the southern shore of Alcudia Bay a pair were building on a ledge of rock, on a rocky bluff, at the mouth of a torrente, beyond Picafort, on 29 April, 1920.

Obtained by v. Jordans.

127. *Milvus ægyptius*. Egyptian Kite.

Included in v. Jordans' list on Barcelo's authority.

128. *Milvus migrans*. Black Kite.

Not common; examples were seen near Pollensa on 9 February, 1920, and a pair near Alcudia on 14 April, 1920.

Included in v. Jordans' list.

129. *Falco peregrinus*. Peregrine Falcon.

Peregrines were noticed chiefly in the winter, when duck were plentiful in the lagoons and marshes, but a pair of large dark-coloured Falcons were seen hunting over the woods and hills to the west of Puerto Alcudia on 4 May, 1920, and a single example of the same species in the

Albufera on 1 April, 1920. In May 1921 a pair were nesting on a precipice in the hills to the west of Alcudia, and there was also another pair in the cliffs of the Cabo del Pinar.

Observed by v. Jordans.

A rather smaller and redder species of Falcon than the Peregrine was frequently seen during the winter in the district, chasing the Duck on the lagoons or worrying the Marsh-Harriers, and the same species were seen persecuting the tame Pigeons above the town of Palma. They were so exceedingly wary that I could not procure a specimen.

130. **Falco subbuteo.** Hobby.

Included in v. Jordans' list on Barcelo's authority. Witherby also noticed it.

131. **Falco æsalon.** Merlin.

A female was seen in the Alcudia marshes on 28 December, 1919.

Not observed by v. Jordans, but he notes a specimen in the Instituto Balear at Palma.

132. **Falco eleonoræ.** Eleonora's Falcon.

I have not yet satisfactorily identified this species in the district, but v. Jordans includes it in his list and Witherby observed it in July 1919.

133. **Falco vespertinus.** Red-footed Falcon.

Included in v. Jordans' list.

134. **Falco tinnunculus.** Kestrel.

A few pairs of Kestrels inhabit the district, but they are by no means numerous. They nest usually among the crags in the hills and in the sea-cliffs; one pair breeds every year in the Torre Mayor at Puerto Alcudia. They have young in May.

Observed by v. Jordans.

135. **Falco naumanni.** Lesser Kestrel.

I have never yet seen this species, but v. Jordans has observed it.

136. *Pandion haliaëtus*. Osprey.

Two or three pairs are resident in the district, one pair nesting on the cliffs on the southern face of the Cabo del Pinar and another pair on the cliffs of the Alcudia peninsula on Pollensa Bay. I have seen as many as five fishing on the lagoons near Puerto Alcudia at the same time, and a pair or more were daily on these lagoons or on the Bay near the Port, either fishing or perched on the posts in the lagoons or on the sandbanks in the Bay, near the flocks of gulls there. At the end of April the birds carried their prey away to the cliffs of the peninsula, where probably they had young ones. This species is found pretty generally all round the coast of the island.

Obtained by v. Jordans.

137. *Phalacrocorax carbo*. Cormorant.

Resident, nesting on the cliffs of the Cabo de Menorca and round to the Cabo del Pinar. During the winter a large flock fished daily in the lagoon behind the pine-woods inland from Alcudia Bay, and then returned every night to roost at a certain spot on the crags and among the stunted pines on the cliffs of the southern face of the Cabo del Pinar, sharing their roosting-place with an equal number of Herons; and when I visited this place in January 1920 about a hundred of each species were there—some of the Herons fast asleep on the crags and in the caverns of the cliff, and many of the Cormorants too lazy to fly away. Both species nest at this spot—the Cormorants on the cliffs, and the Herons either on the cliffs or in the pine-trees. When the harbour of Alcudia is quiet, in bad weather or on feast-days, Cormorants come right into the harbour and are sometimes caught in the nets.

Obtained by v. Jordans.

138. *Phalacrocorax graculus desmarestii*. Shag.

Not very plentiful. Two or three pairs nest together at various spots scattered along the same cliffs as those in which the Cormorants breed, and they roost in the winter at their nesting-places. None are ever seen in the lagoons, but

they frequent the harbour of Alcudia, as well as the small bays and inlets of Alcudia and Pollensa Bays. After heavy gales they are found frequently dead upon the shore.

Included in v. Jordans' list.

139. **Pelecanus onocrotalus.** White Pelican.

Von Jordans quotes a record of its occurrence in the Albufera in 1773.

140. **Anser anser.** Grey Lag-Goose.

A rare winter visitor. I saw one on the lagoons near Puerto Alcudia on 19 February, 1921, and heard a wild Goose of some sort passing over the Albufera on 28 February, 1920.

141. **Anser fabalis.** Bean-Goose.

Included by v. Jordans on Barcelo's authority.

142. **Cygnus cygnus.** Whooper Swan.

Von Jordans quotes a record of Barcelo's of its occurrence in the Albufera in 1864.

143. **Anas platyrhyncha.** Wild Duck.

Common and resident. During the winter large flocks frequent the Albufera and adjacent lagoons as well as the Albuferete, and I have seen miles of Duck in Alcudia and Pollensa Bays during calm weather. The majority depart in early spring, but a considerable number remain to nest in the marshes and pine-woods near the shore. In March and April I have found their nests in the pine-woods in thickets of heather, myrtle, butcher's broom, etc.; but they are much sought after by the natives, who, if possible, kill the Duck and take her eggs. The eggs are rather smaller than British specimens.

Obtained by v. Jordans.

144. **Anas strepera.** Gadwall.

Included by v. Jordans on Barcelo's authority.

145. *Querquedula querquedula*. Garganey.

Occurs in small numbers in the spring. A male was shot out of a flock of seven on 25 March, 1921, at Puerto Alcudia.

Not observed by v. Jordans, who quotes Barcelo.

146. *Querquedula crecca*. Common Teal.

Plentiful in the winter in the Albufera and lagoons, and in lesser numbers in the Albuferete, but I have never seen any late enough in spring to suppose they might nest.

Included in v. Jordans' list.

147. *Mareca penelope*. Wigeon.

Large flocks frequent the lagoons in the winter and resort to the bays of Alcudia and Pollensa during the day, but all depart in early spring. They rarely visit the reedy swamps of the Albufera.

Included in v. Jordans' list.

148. *Spatula clypeata*. Shoveler.

Von Jordans includes it on Barcelo's authority.

149. *Dafila acuta*. Pintail.

Great numbers in the Albufera and lagoons, near Alcudia, in the winter, generally associating with Wigeon. Some remain in the district later than the other winter Ducks, and I have seen them on the sand-banks in Alcudia Bay as late as the middle of April.

Included by v. Jordans on Barcelo's authority.

150. *Netta rufina*. Red-crested Pochard.

Von Jordans includes this species on the authority of Homeyer; but Barcelo's notes are not applicable in these days, nor are they at all so in the case of—

151. *Nyroca nyroca*. White-eyed Pochard.152. *Nyroca ferina*. Pochard.

Included in v. Jordans' list.

153. *Nyroca fuligula*. Tufted Duck.

Occurs in small numbers in the winter in the Albufera and lagoons; generally associating with the Coots, but none remain to nest.

Included in v. Jordans' list.

154. *Glaucion clangula*. Golden-Eye.

Included by v. Jordans on Barcelo's authority.

155. *Mergus merganser*. Goosander.**156. *Mergus serrator*. Red-breasted Merganser.**

During the wet autumn and winter of 1920-21 several small parties of both these species frequented the lagoons and inundation, near Puerto Alcudia, as well as the mouths of the streams running into Alcudia Bay.

Von Jordans quotes Barcelo as the authority for the occurrence of both these species, as well as for—

157. *Mergellus albellus*. Smew.**158. *Phœnicopterus antiquorum*. Flamingo.**

Whatever may have been the case in former years, the Flamingo certainly does not now breed in Majorea; possibly it may rarely occur on migration. I know of no localities where it would be likely to remain for any time.

Included in v. Jordans' list.

159. *Ardea cinerea*. Heron.

During the winter quantities of Herons inhabit the Albufera and lagoons, and stand in rows along the dykes and ditches, and also frequent the sand-banks in Alcudia Bay. They roost on the cliffs of the Cabo del Pinar, with the Cormorants, and some nest. A few pairs evidently nest also in the reed-beds of the Albufera, but the recesses of this great swamp are quite inaccessible in summer, being covered with dense thickets of reeds growing in water more or less deep. Some pass over the district on spring migration.

Observed by v. Jordans.

160. *Ardea purpurea*. Purple Heron.

Arrives in April in small numbers in the Albufera, where it breeds; but only visits the Albuferete on passage, as this marsh is now so curtailed in size.

Observed by v. Jordans.

161. *Egretta alba*. Great White Heron.

Von Jordans remarks on Barcelo's note on this species.

162. *Egretta garzetta*. Little Egret.

Observed by v. Jordans.

163. *Ardeola ibis*. Buff-backed Heron.

On 12 January, 1920, one of these birds flew into the Albufera and settled among some cattle grazing in a shallow part; it was evidently a stranger, as the cattle were alarmed at its appearance; but it did not remain long before continuing its flight southwards.

Not included in v. Jordans' list for Majorca.

164. *Ardeola ralloides*. Squacco Heron.

Von Jordans quotes Barcelo.

165. *Nycticorax nycticorax*. Night Heron.

On 24 March, 1921, I disturbed a party of these birds among the pine-woods between the Albufera and Alcudia Bay. I came across them frequently afterwards in the same woods up to the end of May, and quite expect they nested in the neighbourhood.

Included by v. Jordans on Homeyer's authority.

166. *Botaurus stellaris*. Bittern.

A common resident in the Albufera, where its "booming" may be heard, both by day and night, at most seasons of the year. It occasionally strays into the adjacent lagoons, where I have seen specimens shot.

Obtained by v. Jordans.

167. *Ciconia ciconia*. White Stork.

168. *Platalea leucorodia*. Spoonbill.

Von Jordans includes these species on Barcelo's authority.

169. *Plegadis falcinellus*. Glossy Ibis.

Included in v. Jordans' list on Homeyer's authority.

170. *Grus grus*. Crane.

Included in v. Jordans' list on Barcelo's authority.

171. *Anthropoides virgo*. Demoiselle Crane.

Von Jordans quotes Barcelo regarding the occurrence of this species.

172. *Balearica pavonina*. Crowned Crane.

Included in v. Jordans' list ; but Howard Saunders' remark that it has " never occurred " is probably correct.

173. *Œdicnemus œdicnemus*. Stone-Curlew.

Resident and not uncommon. Small parties frequent the sea-shore, fields, and marshes near Puerto Alcudia, and Pollensa Bay in the winter, and scattered pairs nest on open sandy spots among the pine-woods on the shores of Alcudia Bay and on the rocky fields near the lagoons. In the pine-woods the eggs are generally laid at the foot of a small pine-tree rather than in the open, where they would run the risk of being destroyed by cattle. Like most Plovers, they make a number of scrapes before deciding in which one to deposit their eggs.

Obtained by v. Jordans.

174. *Glareola pratincola*. Collared Pratincole.

Included in v. Jordans' list on the authority of Homeyer and Barcelo.

175. *Scolopax rusticola*. Woodcock.

A winter visitor, found sparsely throughout the whole district, arriving in October and remaining sometimes until the latter part of March. They are most plentiful in the pine-woods on the shore of Alcudia Bay among the thickets of myrtle, juniper, heather, rosemary, etc. ; but I also have flushed them in the uncultivated parts, among the orchards, in the woods among the hills, on the barren Cabo de Menorca, and in the cane-brakes on the bunds in the Albufera, and I have seen them fighting in the evening to the Albufera from the adjacent hills.

Included in v. Jordans' list.

176. *Gallinago gallinago*. Common Snipe.

Found in quantities during the winter in the Albufera and Albuferete, and adjacent country. A good many are still in the swamps at the end of April, but I have not yet discovered signs of their nesting.

Observed by v. Jordans.

A specimen of Sabine's Snipe was shot in the Albufera on 27 February, 1920, but was so mangled by the dog that retrieved it that it was not possible to preserve it.

177. *Gallinago media*. Great Snipe.

Included in v. Jordans' list on the authority of Barcelo.

178. *Limnocryptes gallinula*. Jack Snipe.

A few occur in the winter in the same localities as the Common Snipe, but they are not abundant. I trod on one once in the Alcudia marshes; it left some of its feathers beneath my foot.

Included in v. Jordans' list.

179. *Calidris canutus*. Knot.

Some small parties of this species frequented the marshes near Puerto Alcudia in October and November, 1920.

180. *Erolia minuta*. Little Stint.

On 20 May, 1921, I shot an example in the marshes near the Port; two others were near it and were absurdly tame. They were still about on 26 May, and associated sometimes with the Kentish Plovers.

Obtained by v. Jordans.

181. *Erolia alpina*. Dunlin.

Observed by v. Jordans.

182. *Erolia ferruginea*. Curlew-Sandpiper.

Included in v. Jordans' list.

183. *Crocethia alba*. Sanderling.

Witherby observed this species in July 1919 at Alcudia.

184. *Philomachus pugnax*. Ruff.

A flock of four or five individuals frequented the shores of Alcudia Bay all the winter of 1919-20 until the beginning of April 1920. They were always wild and unapproachable.

Von Jordans quotes Homeyer and Barcelo.

185. **Tringa totanus.** Redshank.

Common in the Albufera and adjacent marshes during the winter. A good many were still in the district at the end of May, and I think it is probable that some breed there.

Observed by v. Jordans.

186. **Tringa erythropus.** Spotted Redshank.

187. **Tringa nebularia.** Greenshank.

Von Jordans admits both these species to his list on the authority of Homeyer and Barcelo.

188. **Tringa hypoleuca.** Common Sandpiper.

Occurs in small numbers throughout the winter, even on the shore at Palma below the Almudaina. I have observed them in pairs in the district at the end of May, so possibly some breed here.

Observed by v. Jordans, and though he speaks of it as a breeding species, the nest and eggs have yet to be obtained from the island.

189. **Tringa ochropus.** Green Sandpiper.

Found singly or in pairs in suitable localities, especially in the Albufera, during the whole winter, and some were still there at the end of May.

190. **Tringa glareola.** Wood-Sandpiper.

Occurs sparingly in the Albufera during the winter and late in the spring.

Obtained by v. Jordans.

191. **Limosa limosa.** Black-tailed Godwit.

Included in v. Jordans' list on Homeyer's and Barcelo's authority.

192. **Numenius arquata.** Curlew.

An odd bird or two frequent the shores of Alcudia Bay and adjacent lagoons and marshes all the winter and up to May. It also occurs sparingly on other parts of the coast.

Included in v. Jordans' list.

193. **Numenius phaeopus.** Whimbrel.

Included in v. Jordans' list.

194. **Numenius tenuirostris.** Slender-billed Curlew.

Admitted in v. Jordans' list on the authority of Homeyer and Barcelo ; but many of the statements made by these two writers on Majorca birds are so improbable that it is not possible to rely on them, and they are better omitted.

195. **Himantopus himantopus.** Black-winged Stilt.

I saw a single example of this species on the lagoons near Alcudia on 14 April, 1921.

Von Jordans found it breeding in the island.

196. **Recurvirostra avocetta.** Avocet.

Included by v. Jordans on Barcelo's authority.

197. **Charadrius apricarius.** Golden Plover.

Some small flocks were seen among the Peewits in the Albufera during the winter and early spring.

198. **Squatarola squatarola.** Grey Plover.

I saw a flock of seven individuals on 14 November, 1919, and several times later during the same winter, in the Albufera and neighbourhood ; and also a single bird on the sand-banks in Alcudia Bay on 18 November, 1920.

199. **Ægialitis hiaticula.** Ringed Plover.

Observed by v. Jordans.

200. **Ægialitis alexandrina.** Kentish Plover.

A very common and confiding bird, found during all the year, round the shores of Alcudia Bay, in the Albufera, the Alcudia marshes, as well as at the Albuferete and the lower end of Pollensa Bay. Their numbers are considerably augmented in spring by birds arriving to breed. They nest abundantly in a variety of situations—on the sandy shores of the bay, on the dried mud of the lagoons, in the marshes, on the fields, and even on the sandy cart-tracks leading to the shore and on the roadside bounding the shore close to

Puerto Alcudia. The birds pair about the middle of February, and in 1920 I found the earliest eggs on 10 April—two nests with fresh eggs and one with eggs considerably incubated; but in 1921 the first nest was found on 27 March with fresh eggs. The eggs are always difficult to find, being often half buried in the sand, with usually no nest beyond a mere scrape; but nests made on the mud in the marshes or on dry patches inland have generally a number of small stones or pieces of dried mud arranged around and beneath the eggs. In the marshes they are invariably laid on the edge of an open space beneath a tiny stalk of samphire. On the sand the footprints of the birds show the whereabouts of their nest, and generally there are several “scrapes” near by, which have not been utilised for laying in. Several nests were found close to Puerto Alcudia on the sandy shore, where sometimes as many as fifty carts were being loaded with seaweed, and numbers of nests are destroyed by the traffic. One pair of birds tried to nest on a threshing-floor near the Port, but were driven away when the floor was swept for use. Another pair laid their eggs on the top of a low wall bounding the shore. The birds are seldom demonstrative when their nest is approached, the hen bird usually running quietly away from her eggs. The eggs vary very much, one type being very light stone-colour, with small spots of black, brown, and grey. Another type has a dark ground, thickly scrawled with dark black and brown. Some closely resemble eggs of the Little Ringed Plover. The note is a sharp “twit” or “chirrup.”

Obtained by v. Jordans.

201. *Ægialitis dubia*. Little Ringed Plover.

This species is evidently of very rare occurrence, for during 1919 and 1920 I never came across it; but early in March 1921 a few small parties passed through the district, and on 16 March I took a nest with three eggs—an extraordinarily early date considering the inundated state of the country—made on the dried mud of the marshes near the shore, at the side of a small plant of samphire. The birds had entirely disappeared the next day, but on 4 May I found

two pairs nesting in a sandy ravine which divides the pine-woods on the further shores of Alcudia Bay. One pair apparently had young, but I found a nest of the other pair with four eggs, nearly ready to hatch, laid on the sand in a scrape, with a few small pieces of coral and shells, on the top of a hillock among scanty, scrubby herbage. On visiting this spot again on 21 May, I found a similar nest with four eggs, evidently belonging to the same pair of birds. The eggs from both these nests were finely pointed and of a light greyish colour, covered with small dark spots, but, after blowing, the ground-colour changed to light buff. The behaviour of the birds at their nest is totally different from Kentish Plovers, which are not demonstrative whilst they have eggs; but the Little Ringed Plover flies wildly round and round, twisting and doubling and uttering its wild whistle, or else runs frantically about on the ground, whistling plaintively. With a larger series of Little Ringed Plovers' eggs from Majorca, I shall be able to show that these eggs often closely resemble some examples of the Kentish Plover, as I have shown that many of the Kentish Plovers' eggs closely assimilate to those of the Little Ringed Plover. The eggs of the three Little Ringed Plovers taken on 16 March were of a totally different type from those taken on 4 and 21 May.

Included in v. Jordans' list on Homeyer's authority, who writes of it as being the rarest Plover.

202. *Vanellus vanellus*. Lapwing.

Large flocks inhabit the Albufera and neighbourhood during the winter, but all leave the district in the beginning of March. Smaller quantities are found in the Albuferete in the same season.

Included in v. Jordans' list.

203. *Hæmatopus ostralegus*. Oystercatcher.

A small party frequented the sand-banks in Alcudia Bay from 11 April, 1920, and were still in the district on 3 May, but later I did not observe them.

Included in v. Jordans' list.

204. **Arenaria interpres.** Turnstone.

Included in v. Jordans' list.

205. **Larus canus.** Common Gull.

Included in v. Jordans' list on the authority of Barcelo.

206. **Larus cachinnans.** Yellow-legged Herring-Gull.

This is the only resident Gull, and is found in comparatively small numbers. Scattered pairs nest on the cliffs of the coast.

Obtained by v. Jordans.

207. **Larus marinus.** Great Black-backed Gull.

A few immature specimens were noticed during the winter.

Included in v. Jordans' list on the authority of Barcelo.

208. **Larus fuscus.** Lesser Black-backed Gull.

A few examples, both mature and immature, of this species were observed during the winter.

Included in v. Jordans' list on Barcelo's authority.

209. **Larus melanocephalus.** Mediterranean Black-headed Gull.

I did not identify this species until 11 April, 1921; they were then easily distinguishable from *Larus ridibundus* by their black heads.

210. **Larus ridibundus.** Black-headed Gull.

Common during the winter in the Albufera and marshes and on the coast, and remaining until the end of March or middle of April, when they have completely assumed their brown hoods.

Obtained by v. Jordans.

211. **Larus minutus.** Little Gull.

An immature example of this species, in handsomely marked plumage, frequented a lagoon in the marshes near Puerto Alcudia for some time at the end of March and beginning of April.

212. *Larus audouini*. Audouin's Gull.

Included in v. Jordans' list.

213. *Larus gelastes*. Slender-billed Gull.

On 21 May, 1921, I saw a Gull, which I believe to have been of this species, with some Herring-Gulls on a lagoon near Puerto Alcudia.

214. *Gelochelidon nilotica*. Gull-billed Tern.

Included in v. Jordans' list on Barcelo's authority.

215. *Sterna hirundo*. Common Tern.

A small party of these birds were fishing in Alcudia Bay on 11 April, 1921, but had passed on by the next day.

Included in v. Jordans' list on Barcelo's authority.

216. *Sterna minuta*. Little Tern.

Included in v. Jordans' list on Homeyer's authority.

217. *Sterna caspia*. Caspian Tern.

I saw an example of this species on 28 April, 1920, flying northwards over the Albufera and lagoons.

218. *Sterna sandvicensis*. Sandwich Tern.

Included in v. Jordans' list on Barcelo's authority.

219. *Hydrochelidon nigra*. Black Tern.

220. *Hydrochelidon leucoptera*. White-winged Black Tern.

Both these species are included in v. Jordans' list on Barcelo's or Homeyer's authority.

I may remark that, with regard to the Terns particularly, the quotations that v. Jordans has inserted in his list from earlier observers are, in these days, utterly inapplicable.

221. *Catharacta skua*. Great Skua.

I saw one on 29 March, 1920, half-way between Minorca and Majorca, among Herring-Gulls, some way astern of the steamer.

Included in v. Jordans' list on Homeyer's authority.

222. *Alca torda*. Razorbill.

Von Jordans states it was obtained near Arta in 1913.

223. *Uria troile*. Common Guillemot.

Included in v. Jordans' list.

224. *Fratercula arctica*. Puffin.

Many frequent the Bay of Alcudia and the sea between Minorca and Majorca, and a few Pollensa Bay, during the winter up to the end of March; they never venture near the land.

Included in v. Jordans' list.

225. *Thalassidroma pelagica*. Storm Petrel.

Included in v. Jordans' list.

226. *Puffinus p. yelkouan*. Levantine Shearwater*.

Frequent in Alcudia and Pollensa Bays and neighbouring sea all the year. In January 1921, when in a boat between the Cabo de Menorca and the Cabo del Pinar, one of these birds suddenly appeared close to the boat, diving around and beneath it in a frenzied manner and following any object thrown to it, until it was touched by an oar, when it took to flight.

Observed by v. Jordans.

227. *Puffinus kuhli*. Mediterranean Great Shearwater.

The most abundant sea-bird in the Bays of Alcudia and Pollensa and adjacent sea all the year; many are caught by fishermen in their nets.

Observed by v. Jordans.

Both the above Shearwaters nest sparingly on the coast of Majorca and neighbouring islets, but more abundantly in Minorca and its islands.

228. *Podiceps cristatus*. Great Crested Grebe.

Several examples frequented the Bay of Alcudia and adjacent lagoons during the winter of 1920-21.

Included by v. Jordans on Barcelo's authority.

* See note on p. 676.

229. *Podiceps griseigena*. Red-necked Grebe.

I observed this species in small numbers on the lagoons near Puerto Alcudia in November 1921.

Included by v. Jordans on Barcelo's authority.

230. *Podiceps auritus*. Eared Grebe.

Included in v. Jordans' list.

231. *Podiceps nigricollis*. Black-necked Grebe.

This species frequents the lagoons in the neighbourhood of Puerto Alcudia during the winter in small numbers, and though they do not remain to breed on these pieces of water, they probably remove to the Albufera adjoining for that purpose.

232. *Podiceps ruficollis*. Little Grebe.

Not uncommon in suitable localities; there were numbers in the Albufera all the year which strayed on to the adjacent lagoons during the winter.

The Grebes, when attacked by Marsh-Harriers, dive hurriedly, splashing the water high into the air, possibly with the idea of driving off their pursuer.

233. *Rallus aquaticus*. Water-Rail.

Fairly plentiful in suitable localities all the year.

Obtained by v. Jordans.

234. *Porzana porzana*. Spotted Crake.

Nearly as plentiful as the last-named, and a good many are shot in the autumn.

Included in v. Jordans' list on Barcelo's and Homeyer's authority.

235. *Porzana pusilla*. Baillon's Crake.

236. *Porzana parva*. Little Crake.

Von Jordans includes both these species in his list.

237. *Crex crex*. Corn-Crake.

Included by v. Jordans on Barcelo's authority.

238. *Gallinula chloropus*. Moor-Hen.

Not very numerous and very shy. Observed in the Albufera and in the ditches close to Alcudia all the year.

Included by v. Jordans.

239. *Fulica atra*. Coot.

Very common in the winter, when large flocks frequent the Albufera, the lagoons, the Albuferete, and the Bays of Alcudia and Pollensa, but their numbers are considerably reduced in the nesting-season. The Marsh-Harriers often make determined attacks on the flocks of Coots and attempt to prey on them, and by swooping above them try to separate a bird from the flock; but the Coots scutter wildly over the water with such a flapping and splashing as can be heard a long way off, and then as quickly as possible assemble together again, while the Harrier retires to rest near by until it renews its assault.

Included in v. Jordans' list on Barcelo's authority.

240. *Fulica cristata*. Red-lobed Coot.

This species is also included by v. Jordans from Homeyer's and Barcelo's observations; but amongst the numbers of *F. atra* that I have seen or handled, I have never come across *F. cristata*.

241. *Porphyrio cæruleus*. Purple Gallinule.

Included in v. Jordans' list.

242. *Columba ænas*. Stock-Dove.

Included by v. Jordans on Barcelo's authority.

243. *Columba palumbus*. Wood-Pigeon.

This species is a summer visitor to the district, and I did not come across any until 19 April, 1920, when they appeared in the pine-woods among the hills and were busy pairing. In 1921, I noticed the earliest arrivals on 12 March. They are not plentiful, and only resort to those woods where the trees are of good size.

Observed by v. Jordans.

244. *Columba livia*. Rock-Dove.

A plentiful resident, but very wild. Small parties up to, perhaps, fifty individuals were scattered about in suitable localities along the coast as well as about some of the cliffs inland. One flock had its invariable line of flight from its feeding-grounds inland to the Cabo de Menorca by way of Col Baix, and came rushing up over the tops of the pine-woods, to hurl themselves through the gap to the caverns they frequented in the cliffs beneath. Another party always flew over the pine-woods on the shore of Alcudia Bay towards Pollensa Bay, and along that coast to the Cabo del Pinar. I have occasionally seen flocks feeding in the fields.

Included in v. Jordans' list.

245. *Streptopelia turtur*. Turtle-Dove.

A common summer visitor, arriving at the end of May and nesting plentifully in the pine-woods on the shores of Alcudia Bay. I found the earliest egg on 21 May, 1921.

Observed by v. Jordans.

246. *Alectoris rufa*. Red-legged Partridge.

Common on rocky hillsides and scrub-covered ground, but very wild and shy. Very few came into the markets during the very wet winter of 1920-21.

Observed by v. Jordans.

Witherby states that two which I obtained are neither *intercedens* nor *hispanica*, the two Spanish forms, but are like the typical form in colour, though a larger series may prove that they are rather smaller.

247. *Coturnix coturnix*. Quail.

A resident, but not very plentiful. I have not noticed any signs of large spring or autumn migrations. Heard calling in the crops during April and May, and during the winter frequenting also wet, marshy land.

Obtained by v. Jordans.

XXXVII.—*Subspecies and their part in Evolution.*

By J. LEWIS BONHOTE, M.A., M.B.O.U.

MR. LOOMIS'S letter in 'The Ibis' (1920, p. 964) on subspecies contains many grains of sound commonsense, which, if it only makes us pause for a few moments to consider what subspecies really are, how they arise, and whither their recognition is leading us, will have had a most beneficial effect. It must be remembered—and the fact is too often forgotten—that nomenclature is a means to an end, and not the end itself. In order to be able to handle the vast array of facts presented by a study of Nature, naturalists have invented a system whereby relationships between various groups are roughly shown by methods of grouping and naming; and up to some 20 years ago the "species" was the smallest "item" in that system. The object of this system, however, was not merely to enable us to arrange our collections in cabinets, but that, having arranged them in some sort of a natural order, we might attempt with greater ease to unravel some of the mysteries of Nature's laws. I am not prepared to say that such a "unit" as a species actually exists in Nature. When it does it must have been brought about either because that species arose as a discontinuous variation, or because the connecting series of small variations have been lost so as to leave it without any obviously near relatives. This latter is the case, as we know, with many present-day species, and thus is formed what Mr. Loomis calls a "fundamental bird unit," although I do not agree with him that they are in any way "fundamental"; nevertheless, for practical purposes, they may be considered as "units."

Of late years the accumulating of larger and more carefully collected series has shown us that many of what were previously considered merely as sporadic varieties are in reality definite phases common to all individuals of a particular species in a certain area; and that such a form intergrades gradually into the form which happens to be next it geographically. These came to be recognized as

subspecies, and were designated in our "system" by a trinomial. In my own opinion the binomial species name is the only one that should appear as a heading in books and papers, and the subspecies should be given as a sub-heading—this, by the way, as my present object is not to deal with trivial details, but to get at what subspecies are and the part they play in evolution.

It is generally agreed, though the rule is frequently honoured in the breach, that trinomials should only be given to geographic forms—that is to say, to variations due solely to the influences of the climatic conditions of their habitat, and it is reasonably stretched to include island varieties; but it must not be forgotten that in an island race, "isolation" forms an additional factor which has influenced the separation; and in a closely-lying group of islands where each island has a distinct form though the climate is similar, "isolation" has probably been the chief factor in separating the race*. I will now consider Messrs. Lowe & Praed's letter ('Ibis,' p. 344), in which at the beginning they strike the right note by asking "of what scientific value are these variations?" I will not deal at length with the rest of this interesting letter, but merely note two points—they imply that subspecies are of two kinds: (1) due to "discontinuous" variation, (2) due to environment. I had always understood that a true subspecies was always supposed to be restricted to the latter cause, and certainly think it should be so. Secondly, they imply that variations (subspecies) caused by environment cannot be inherited; and hence it would follow that a true subspecies could have had no influence on evolution, and could never develop into a new species. Unfortunately, neither of these authors can have had any practical experience of breeding birds or animals, or they would realize how very small variations can be intensified and fixed from a purely selective, as apart from any creative, agency. They are quite right in carefully distinguishing between continuous and discontinuous variations, but they are

* The same conditions occur not unfrequently on land where races are separated by tracts of country unsuitable to them.

mistaken if they think that the latter alone influence heredity. In my book ('Vigour and Heredity,' p. 173 *et seq.*) I have gone more fully into the causes that may have brought about geographical races, but, put briefly, it amounts to this—changes of climate and food affect the "Vigour" (rate of metabolism) of an individual; externally this shows itself primarily in its colour, but also in many other ways. The climate acting through the general vigour of the individual will affect the nutritive value of the egg (*e.g.* underfeed a breeding bird and see if the chick is not a weakling), and thus the individual will tend to produce a progeny having a similar vigour to itself and also of a similar coloration.

I am not suggesting, of course, that such a change would take place at once, but only in the course of many generations; but none the less it does take place, and the conditions brought about by environment are inherited. A further proof of this is that when subspecies which have originated in different localities extend their range and meet in a common locality (*e.g.*, the Meadow-Starlings of North America*), they yet retain their subspecific characters. On this line of argument it is evident that discontinuous variations can never prove true subspecies, since they are not due to environment. Dimorphic forms may in some cases be due to environment; but these should, I think, be given specific rank, and, in any case, should not be regarded as subspecies and designated by trinomials, since they often occur side by side (*e.g.*, some Skuas, Herons, Fulmar, etc.). My conception of a species as a whole is that there are a number of "factors" which may or may not have a Mendelian inheritance, but which have a separate and definite inheritance. A "unit" species, say the Linnet, will contain a definite number of these factors; another nearly allied "unit" species, say the Redpoll, will contain a very large percentage of the same factors, but a few different ones, and so on. In dimorphic species—*e.g.*, Black-eared and Black-throated

* See Chapman, Bull. Amer. Mus. N. H. xiii. 1900, p. 318.

Wheatear, Blue and White Herons (*Ardea rufa*)—all the factors will be the same except one or two ; but on my reasoning they are none the less good species, because they do not contain *exactly* the same factors. Now all subspecies of a given “unit” contain exactly the same factors ; but the somatic expression of these factors has been originally altered by the environment, and subsequently become inherited. We have only to note in domestic types the reversion, after some generations, to the wild form to prove the truth that the factors have remained unchanged, but that the alterations caused by environment (domestication) have been so far inherited that the reversion is not complete for several generations.

Since the above was written, I have had the pleasure of reading Colonel Meinertzhagen’s excellent article in the current number of ‘The Ibis,’ p. 528, to one or two points of which I should like to refer.

The author is of opinion that no deductions from mutations carried out on domestic varieties can be of value, since such conditions do not exist in Nature ; but surely by carrying out heredity experiments under conditions which we know, we are able the more accurately to attempt to understand the laws of heredity, and can then see if they would apply to wild species under natural conditions.

There is, to my way of thinking, no need to question whether species arose by mutations or by gradual selection. In the case of domestic freaks, which form but a small proportion of domestic races, they probably originated as mutations ; but by far the greater number of our “fancy” breeds to-day have been brought about by a process of careful and minute selection in order to intensify or diminish any particular trait or character ; and in that process each generation would show a larger and increasing proportion of individuals having that character, thus proving that not only any particular character, but also its intensification, was inherited. The reason this fact is not fully recognized is because of the comparatively short periods during which a

constant selection by one breeder, under the same conditions, is able to be carried out—say 25 to 50 generations at the most; and what is that compared with the ages which it has taken to develop species, or even subspecies? Facts on this subject being almost impossible to get, it is well to bear in mind a paper by Mr. H. Lyster Jameson (Journ. Linn. Soc., Zool. vol. xxvi. pp. 365–473) on a variety of a House-Mouse on a sand-bank in Dublin Bay, which sand-bank has only been in existence about 100 years; in this case the differentiation was only beginning and many normal coloured mice were found. In short, the question of time is all important, and to argue that nature proceeds on different lines from man because varieties produced by human agency easily revert, is fallacious if we compare the æons during which natural selection has acted, compared with the comparatively few generations during which artificial selection has been conducted. The fact, however, that variations artificially produced by man through an alteration of environment have been inherited for several generations when normal conditions were resumed, has been proved by Mr. W. E. Agar on variations in a Cladoceran (*Simocephalus vetulus*), and by Messrs. Delcourt & Guyenot on *Drosophila* (Proc. IV. Int. Congr. Genetics, Paris, 1913, p. 478); so that we have here considerable evidence that man's methods in producing new forms are not fundamentally different from those obtaining in nature.

Colonel Meinertzhagen wonders that no artificial variety of Fowl, Pigeon, or Canary has ever occurred in a wild state. This statement, if correct, would not be unexpected, since an artificial environment cannot occur in nature, and if such varieties did appear, they would show themselves in an initial stage and soon be swamped, whereas man has developed and intensified them by selection. In a wider sense, however, they do occur sporadically. For instance, a Canary—typically a green bird—is yellow in confinement, yet the nearly allied Serin shows a considerable tendency to yellow, and among Parrots (green birds) yellow varieties are

by no means unknown; or again, chequering, a character common to some domestic Pigeons but probably unknown in the pure wild Rock-Pigeon, is found in a few wild species of Pigeon—*e.g.* the Guinea Pigeon of Africa, and so on.

I am quite in agreement with Colonel Meinertzhagen that a mutation cannot establish a subspecies, since to my mind a subspecies is entirely an environmental or geographic form; and if my reasoning in the earlier part of this paper be correct, a geographic form could never become a separate species. It might, I conceive, be possible for some factor to become "latent" or lost through a change in the environment, and then a new species would evolve. Such an event might, by some, be termed a mutation (it would probably follow a Mendelian inheritance), but that is a debatable subject on which I will not venture at present.

Putting the above case on one side and omitting dimorphic forms which possibly fall in the above category, have we any definite knowledge of a new species originating as a mutation? Omitting *Pavo nigripennis*, which has not, I believe, occurred in a wild state, I can only recall the Italian Little Owl, *Athene chiaradia* (Giglioli, Ibis, 1903, p. 1); but unfortunately, although this sport was found in one or two places and seemed to be on the increase, it was collected for museums, and thus an unique chance of getting evidence on this problem was lost.

In putting forward these views, I do not claim that they are in any way indisputable or final, nor has it been my object to pour destructive criticism on the observations and thoughts of the previous writers; but they have been written in the hope that some of the energies now devoted to the naming of new forms may be diverted to consider why we have nomenclature at all, and whether it were not time that we made use of these subspecific bricks to add something to the existing structure of scientific ornithology.

XXXVIII.—*Obituary.*

HENRY WEMYSS FEILDEN.

SOLDIER and ornithologist, explorer and geologist, sportsman and botanist, author and archaeologist—to few men has it been given to fill so many parts and so well as to Henry Wemyss Feilden.

Born in 1838, the second son of Sir William Feilden, second baronet of Feniscowles, Lancashire, he died on 8 June, 1921, at Burwash in East Sussex, in his 83rd year. He entered the Army at the age of nineteen, and his military career was varied and extensive: India and the Mutiny, China and the Taku Forts, the Boer Campaign in 1881, and the Great Boer War in 1890, when he acted as Paymaster of the Imperial Yeomanry and received the C.B.; garrison duty in Barbados and Natal—all these he experienced, and it also fell to his strange lot to occupy the post of A.A.G. to the Confederate Army in the American Civil War from 1862–1865. The circumstances under which he held this appointment were, that the chiefs of the Confederate forces having made the attempt to conduct their campaign without the discipline of military law, and having failed to do so, turned in their difficulty to Henry Feilden, then on leave in the Southern States and deeply sympathetic with their cause, and enlisted his aid. He surrendered, after the last battle of the Civil War between the North and South, with the remnant of the army of Tennessee under General J. E. Johnston, to General Sherman. In 1864 he married Julia, daughter of Judge David MacCord of South Carolina, who, after more than half a century of happy married life, predeceased him by a year, and from the shock of whose death he never recovered. There were no children of the marriage.

As an ornithologist, Feilden was perhaps best known for his work in connection with the Arctic Expedition of Admiral (then Captain) Nares in 1875, to whose command

he was attached as official naturalist on board H.M.S. 'Alert.' The results of his valuable labours on this occasion were duly recorded on the publication of Nares' second edition of the 'Narrative of the Voyage to the Polar Sea' (1878), Feilden being responsible for the sections on Ethnology, Mammalia, and Ornithology, and jointly with de Rance for that on Geology. The chief ornithological event of the expedition was the finding by Feilden of the nestlings of the Knot (*Tringa canutus*), the eggs of which bird were, however, not discovered till some 25 years afterwards, when they were sent back to Europe by Walter and Birulia in the course of the Russian Polar Expedition, 1900-1903. Besides this voyage to the Arctic, Feilden at various times visited the Færoe Islands ("Birds of the Færoe Islands," Zoologist, 1872, pp. 3210, 3245, 3277), Iceland, Spitzbergen, Novaya Zemlya ('Beyond Petsora Eastward,' by H. J. Pearson, with appendices on the Botany and Geology by H. W. Feilden), the result of his observations on these various journeys also appearing in numerous papers contributed to 'The Ibis,' 'Zoologist,' and other journals.

Much of his work as regards the ornithology of his native country was carried out in conjunction with his friend, the late J. A. Harvie-Brown: together they visited the mainland and isles of Scotland* and together they formed the valuable series of skins which, with the collection of eggs and specimens brought home by Feilden from his various expeditions, was destroyed in the disastrous fire at Harvie-Brown's mansion of Dunipace, Stirlingshire, in 1897. In 1880 Feilden settled for a time at West House, Wells, Norfolk, and while resident there became a member of the Norfolk and Norwich Naturalists' Society, and President of that body in 1885. In 1901 he inherited from his uncle, Mr. Leyland Feilden, the fine Elizabethan house of

* For the account of Feilden's finding the eggs of the Dotterel (*Charadrius morinellus*), see Harvie-Brown & Buckley, 'Fauna of Moray Basin,' vol. ii. p. 172.

‘Rampyndene’ in the High Street, Burwash, where he passed the latter years of his life. He became deeply attached to his adopted county, and was an enthusiastic student and collector of old Wealden ironwork, a fine collection of specimens being presented by him to the Hastings Museum, of which he was an enthusiastic supporter, as well as being an active member of the Hastings and St. Leonards Natural History Society. As a sportsman he retained his keenness almost to the end, and dearly loved to bring back a basket of trout or a few brace of wild pheasants from the lonely streams or deep woodlands of Dallington Forest. He possessed a fair library, though his chief interest in books lay in works relating to exploration and travel, and of these he presented many a scarce volume to the Geographical Society, of which he was so many years a Fellow. In East Sussex he was respected and beloved by all who knew him, and was consulted on many a subject by his friends and neighbours. He was a most courteous and painstaking correspondent and a kindly critic, but, like his great contemporary—Newton—he had an intense horror and dislike of inaccurate statement or unverified reference.

Perhaps one of the most striking traits of a remarkable character was the deep interest and enthusiasm which he always displayed in any matter on which he was engaged, and it is no exaggeration to say that it gave him as much pleasure to record the nesting of the Snipe in the parishes of Burwash and Etchingham in 1914*, as it did to obtain the eggs of the Sanderling (*Tringa arenaria*) in Grinnell-land in 1876.

The writer of this notice was privileged to know him well and to esteem him greatly.

Colonel Feilden was one of the oldest surviving members of the B. O. U., having been elected so long ago as 1873. His military decorations comprise the C.B. (1900) and medals with clasps for the Indian Mutiny (1857–8), the China War (1860), and the Boer War (1900–1). W. H. M.

* “Snipe and Redshank nesting in Sussex.” Hastings & E. Sussex Nat. vol. ii. p. 193.

WILLIAM WARDE FOWLER.

By the death of Mr. William Warde Fowler, which occurred at Kingham in Oxfordshire on 14 June last, we are deprived of one who combined the rare distinction of being both a classical scholar and an ornithologist.

Born at Langford Budville, Somerset, on 16 May, 1847, he was the second son of Mr. John Coke Fowler, a stipendiary magistrate at Swansea. From Marlborough he proceeded to Oxford, where he matriculated at New College, but he won a scholarship at Lincoln in the same year, with which College he was closely associated for the rest of his life, being elected a Fellow in 1872. He graduated in 1870 taking a first class in Lit. Hum., and he served as Tutor and Sub-Rector of his college until he retired from active work a few years ago.

Warde's first and perhaps best-known work, 'A year with the Birds,' was published in 1886 under the pen-name of "An Oxford Tutor." It combined personal charm and good scholarship with a love and power of observation new to that generation of Oxford men. The book deals with bird-life as seen at Oxford, at the writer's country home at Kingham in the valley of the Evenlode, and with observations made in the Alps of Switzerland. The second edition contains a good list of the Oxford birds. His other collected studies were 'Tales of the Birds,' published in 1888, 'Summer Studies of Birds and Books,' 1895, and 'More Tales of the Birds,' in 1902; while in 1901, in collaboration with Prof. L. C. Miall, he edited with introduction and notes an edition of White's Selborne.

Perhaps his most remarkable observations were those on the Marsh-Warbler (*Acrocephalus palustris*). Owing to its very close resemblance to the Reed-Warbler, it escaped the attention of the earlier British ornithologists, and it was not recognized as a British bird even so late as when Newton published his edition of Yarrell. Between the years 1892 and 1905 Mr. Fowler found it nesting every year near his home at Kingham, on the Evenlode, in Oxfordshire; and in

the 'Zoologist' (1906, p. 41) will be found a very good summary of his observations on this rare and elusive bird.

In addition to his publications on birds, Mr. Fowler wrote extensively on the social and religious lives of Romans. His best-known works were perhaps his 'Social Life at Rome' and his studies of Cicero and Virgil, which brought him a considerable reputation as a classical student. He was a most interesting and arresting lecturer, and had a supreme gift of describing an observation so that it both illuminated and fixed on the mind some far-reaching conclusion.

Mr. Warde Fowler was elected a member of the Union in 1887, and remained a member until 1919 when he resigned. He did not contribute to 'The Ibis,' but published most of his papers, describing his observations, in the pages of the 'Zoologist' between 1893 and 1908.

ALPHONSE DUBOIS.

From the last number of the 'Gerfaut' we learn of the lamented death of Dr. A. Dubois, the doyen of Belgian ornithologists, which occurred at his villa at Coxyde-sur-Mer, where he has been living since he retired from his post in the Royal Museum of Natural History of Brussels, and where he remained throughout the duration of war, as Coxyde is in the corner of Belgium that was never occupied by the German forces.

Alphonse Dubois was born in 1839 at Aix-la-Chapelle, but his father, Charles Frédéric Dubois, also a well-known naturalist, moved to Brussels in the following year, and Alphonse lived the greater part of his life in that city; here he was educated, and obtained a diploma of Doctor of Medicine at the Free University of the city. In 1869 he was appointed Conservator of the section of the higher Vertebrates at the Royal Museum of Natural History, with which institution he remained connected until his retirement just previous to the outbreak of the war.

Among his more important publications may be mentioned :—

Conspectus systematicus et geographicus Avium Europæarum. 1871.

Le Faune illustrée des Vertébrés de la Belgique. Ser. ii. les Oiseaux. 4 vols., with 427 coloured plates. 1876-1894.

Synopsis Avium: nouveau manuel d'Ornithologie. 2 vols., 16 col. pls. Brussels, 1899-1904. 8vo.

Les animaux nuisable de la Belgique (vertébrés). 1 vol., illustrated. Brussels, 1903.

Revue des dernier systèmes ornithologiques et nouvelle classification proposée pour les oiseaux. Paris, 1891.

Remarques sur l'Ornithologie de l'Etat Indépendant du Congo. *Annales du Musée du Congo*, vol. i. 1905.

He also contributed to Wytsman's 'Genera Avium' the monographs on the *Pelecanidæ*, *Musophagidæ*, and *Bucerotidæ*, and over a hundred other communications to various scientific journals. He was a good artist, and most of the illustrations of his various works were prepared by himself.

MAX FÜRBRINGER.

The news of the death of Prof. Max Fürbringer, which occurred at Heidelberg on 6 March, 1920, has only recently reached us, probably owing to the difficulty of seeing the German Scientific Journals during the past two years.

Prof. Fürbringer was born at Wittenberg in 1848, and was therefore in his 75th year at the time of his death. He early devoted himself to the study of the anatomy of the Vertebrates, and after holding various minor teaching posts, was successively Professor of Anatomy at the Universities of Amsterdam, Jena, and Heidelberg, where he succeeded his master, Carl Gegenbaur, in 1901, and where he remained for the rest of his life.

His great work, 'Untersuchungen zur Morphologie und Systematik der Vögel zugleich ein Beitrag zur Anatomie der Stütz- und Bewegungsorgane,' was published at Amsterdam

in two large folio volumes in 1888, and will ever be a monument of his industry and learning. It deals at length with the anatomy of the shoulder-girdle of birds; while in the second volume a scheme of classification was proposed, based on all the facts of the internal and external characters of birds. Unfortunately but little attention was paid to this great work by British ornithologists, though it was noticed in 'The Ibis' (1888, p. 413); and an excellent abstract from the pen of Dr. Gadow, Fürbringer's only serious rival in this subject, appeared in 'Nature' (vol. xxxix. 1888, pp. 150-152, 177-181). Dr. Fürbringer also published a later summary of our knowledge of the Anatomy of Birds in the Report of the Second International Ornithological Congress, held at Budapest in 1891, and a further disquisition on the same subject in the 'Jenaische Zeitschrift f. Naturwissenschaft' (xxxvi. pp. 587-736) in 1902, which was also noticed in 'The Ibis' (1903, p. 614).

No serious student of ornithology can neglect the study of these great works, and the death of their author should recall to us their importance and value.

XXXIX.—*Notices of recent Ornithological Publications.*

Arrigoni degli Oddi's list of papers.

[Elenco delle pubblicazioni del Prof. E. Arrigoni degli Oddi (1884-1920). Pp. 1-10. Venezia, 1921. 8vo.]

Count Arrigoni degli Oddi, who is not only one of the leading Italian ornithologists and Professor of Zoology at Padua, but also a Deputy in the Italian Parliament and a member of the B. O. U. since 1896, has favoured us with a number of his publications, most of which have already been noticed in our pages. The list of his papers, mentioned above, contains 162 titles published between 1884 and 1920, and is a proof of his activity in ornithological work.

Bretscher on Bird-migration in Middle Europe.

[Der Vogelzug in Mitteleuropa. Mit 16 Karten und vielen Tabellen. Von K. Bretscher. Pp. 1-162. Innsbruck (Wagnerschen Univ. Buchdruck.) 1920. 8vo.]

In this separately-published memoir Mr. Bretscher endeavours to trace out the migration routes in Switzerland and the neighbouring countries by an elaborate analysis of all the available data. The first two chapters, comprising more than half the work, deal with the spring and autumn migration in Switzerland. These are followed by an analysis of the spring migration in Alsace-Lorraine, Brunswick, and Hungary, and in the final chapter the influence of temperature is discussed.

The general method employed in the case of Switzerland is to divide the country into seven geographical areas, and by plotting down the date of observation, according to the areas and the date of the "Zugsmittel" or culmination of the migration-time, to discover by what route the various species enter the country. In the case of the spring migration the general conclusion appears to be that most of the migrating birds enter Switzerland at the south-west corner of the Lake of Geneva or in the north-west over the Jura, and that, with the exception perhaps of the Swallow, no birds cross the high ranges of the Alps from the south.

The paper is a long one and full of details and conclusions which it is impossible to summarize in a short notice, and our only fear is that the data used are hardly sufficient to warrant some of the conclusions arrived at.

Chapin on new African Birds.

[Descriptions of four new birds from the Belgian Congo. By James T. Chapin. Amer. Museum Novitates, no. 7, 1921, pp. 1-9; 3 figs.]

This is the fifth preliminary paper on the results of the author's expedition to the Belgian Congo on behalf of the American Museum of Natural History, and contains descriptions of the following new forms from the Ituri and Upper Uele districts:—*Astur toussenellii canescens*, *Colius*

nigricollis leucophthalmus distinguished by its white iris, *Batis ituriensis*, and *Terpsiphone batesi*.

Foster on the Birds of Hillsborough.

[The Birds of Hillsborough. By Nevin H. Foster, M.B.O.U. Proc. Belfast Nat. Hist. & Philos. Soc. 1920-1921, pp. 1-19 (separate pagination).]

Hillsborough is a small town in the north of County Down; it is a short distance from Belfast, and is the centre of a somewhat highly cultivated district. Mr. Nevin Foster has in this paper compiled a list of the birds of the neighbourhood, chiefly from his own notes, dating back to 1902. The list embraces 109 species, out of which 76 have been known to breed in the district.

Several rare species such as the Golden Oriole and the Alpine Swift, the records of which are not entirely satisfactory, are included in the list, but placed in square brackets.

Gurney's Ornithological Report for Norfolk.

[Ornithological Notes from Norfolk for 1920. 27th Annual Report. By J. H. Gurney, F.Z.S. Brit. Bds., London, xiv. 1921, pp. 242-252.]

Mr. Gurney's annual report on Norfolk ornithology contains the usual summary on migration and a series of classified notes. There were no events of unusual importance during the year, but the Curlew is believed to have bred again near King's Lynn and the Sandwich Tern at Blakeney. The Spoonbills came to Breydon in May and stayed about three weeks, though they did not breed, but the Bitterns are now becoming comparatively common, and many nests are located every year.

Hartert on the Birds of the Southern Sahara.

[The birds collected by Capt. Angus Buchanan during his journey from Kano to Air or Asben. By Dr. Ernst Hartert. Nov. Zool. Tring, xxviii. 1921, pp. 78-141; 9 pls.]

Asben or Air is a mountainous district in the southern part of the Sahara, about 350 miles north of Kano the great trade centre in the northern part of Northern Nigeria;

the highest mountain, Mt. Baguezan, reaches an elevation of 6050 feet, and no naturalist has ever previously collected in this district, though it has been occupied by the French now for some years. The results of this expedition are therefore of very special interest, not only because the fauna of Asben was quite unknown, but also because it has brought fresh light on the boundary-line between the Palearctic and Ethiopian regions. Capt. Angus Buchanan, whom Lord Rothschild was fortunate enough to secure to undertake this mission, was most successful, and brought examples of 168 species of birds, of which, however, only 65 were from Asben itself. Of these 65 by far the greater proportion are inhabitants of tropical Africa and had reached Asben from the south, but a few, about 8 or 10 species, must have reached Asben from the north. We may therefore conclude that Asben lies within the Ethiopian Region, while the fauna of Hoggar mountains, about 300 miles to the north, where in 1914 Geyr von Schweppenburg and Spatz made their fruitful collections, is predominantly palæarctic in character.

Capt. Buchanan reached Kano, from Lagos, early in December 1919 and stayed there a month. From there he proceeded to Agades, the capital of the district, which he reached on 11 April, 1920. He was in the mountains from May 8 to June 6 and got back to Kano in September. The rainy season was then at its height. He also made collections of Mammals, Insects, and other animals, and of plants.

Dr. Hartert has discussed the birds at considerable length, drawing attention to their status, distribution, variation, and moults, and has described twelve new subspecific forms. As the Novitates is so accessible to all workers it does not seem necessary to list these here. The nine plates contain views of the scenery of the country from the photographs of Capt. Buchanan.

We can only conclude by congratulating Capt. Buchanan, Lord Rothschild, and Dr. Hartert on having accomplished a fine piece of work and having made a very considerable addition to our knowledge of African birds.

Hellmayr on d'Orbigny's South-American Collections.

[Review of the Birds collected by Alcide d'Orbigny in South America. By C. E. Hellmayr. Part I. Nov. Zool. Tring, xxviii. 1921, pp. 171-213.]

Alcide d'Orbigny (1802-1857) was a well-known French traveller and naturalist in the early part of the last century. During the years 1826-1833 he travelled and collected extensively on behalf of the French government in the south-western part of South America, and transmitted to the Paris Museum large numbers of objects of natural history. The account of the journeys and collections was published in a series of large quarto volumes between 1835 and 1847, but unfortunately was never completed. He also, with the co-operation of his countryman, M. H. de Lafresnaye, published a preliminary list of the species of birds obtained in the 'Magasin de Zoologie,' but this, too, remained incomplete. While most of the birds collected by d'Orbigny are to be found in the Paris Museum, some remained in the possession of Lafresnaye and have now found their way to the Museum of Comparative Zoology in Cambridge, Mass.

Dr. Hellmayr has now undertaken the difficult task of revising and commenting on d'Orbigny's work, for which purpose he made a number of visits to the Paris Museum before the war, and in the present paper he gives us the first part of the results of his long labours. The present instalment deals with the Birds of Prey and a small moiety of the Passeres. The original d'Orbigny specimens, many of them mounted, are listed and re-identified and compared with other examples at Tring and elsewhere. The paper is a most important one for all workers on Neotropical ornithology.

Lavauden on the Mediterranean Peregrines.

[Contribution à l'étude des formes méditerranéennes du Faucon Pèlerin. Par L. Lavauden. Extr. from Rev. Franç. d'Orn. nos. 145, 146, 1920.]

M. Lavauden has given us here a careful critical study of the various forms of Peregrine found round the Mediterranean. He has made a thorough examination of the

literature and compared a large number of examples in the Paris Museum, his own collection, and elsewhere.

He comes to very much the same conclusions as Dr. Hartert, except that he believes that *Falco punicus* of Levaillant, jun., is identical with *Falco brookei* of Sharpe, and not with *F. peregrinoides* Temm. If this is so the Sardinian Peregrine will have to be called *Falco punicus* in future.

M. Lavauden has plotted the measurements of the three Mediterranean Peregrines, of which he has examined and measured 287 adult examples, so as to form an ingenious curve which illustrates very plainly the variation in the wing-measurements of the three forms.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. ix. pt. 3; pp. 97-144, pls. 412-418. London (Witherby), June 20th, 1921.]

A very important discovery is recorded in this part by the author—namely, that the types of Gould's species are not all at Philadelphia. Many are in the British Museum, and Mr. Mathews devotes several pages [105-107] to the subject, which will be fully discussed later. The present part is concerned with seven species of Campophagidæ, of which the Ground Cuckoo-Shrike, with its terrestrial habits, is the most remarkable. Mr. Mathews's argument proves the generic term *Pteropodocys* to have priority over *Cebblepyris*, and he allows three subspecies. Similarly, *Graucalus* takes precedence of *Coracina*, while the Black-faced Cuckoo-Shrike should be specifically named *novæhollandiæ* and not *melanops* [p. 113]. This species was painted by Ellis, and has been confounded with Latham's *robustus*, which is the lesser species. Six subspecies are accepted, for one of which the name *melanops* is used. The type appears to have come from Tasmania, so that *parvirostris* is a synonym.

G. hypoleucus has four Australian subspecies, but it is evident that there are others that are extralimital. The habits of this northern form and of the Little Cuckoo-Shrike need further attention; those of the other species have been

well studied. The last-named bird varies, so that we may admit three subspecies; it is in the Watling paintings, and the name *robustus* supersedes *mentalis*, that name being used subspecifically. *G. affinis* is possibly a synonym [p. 131]. *Paragraucalus lineatus* is correct, as Gould could not, under the present rules, have changed the name to *swainsonii*. Two subspecies are recognized. The case is almost the same with *Metagraucalus tenuirostris*, which Rüppell renamed *jardinii*, but here there are three subspecies. *Lalage* is begun in this part, and on the first page *Monarcha* is concluded, a special point being that *canescens* of Salvadori is reduced to a subspecies of *melanopsis*. *M. kursudi* is altogether dropped.

Riley on new Celebes Birds.

[Five new genera of birds. Four new birds from Celebes. By J. H. Riley. Proc. Biol. Soc. Washington, vol. 34, 1921, pp. 51-58.]

The five new genera are *Compsœnas* for *Zonophaps radiata* (Q. & G.), *Lamprura* for *Zonophaps rufigaster* (Q. & G.), *Diopezus* for *Phlegœnas tristigmata* Bp., *Cranobrontes* for *Cranorrhinus leucocephalus* (Vieill.), and *Orodytes* for *Arachnothera* or *Stigmatops celebensis* Meyer & Wiggles., the last a bird of rather uncertain affinities. The four new forms comprise *Scolopax celebensis*, *Lamprocorax montrosa*, and new forms of *Dendrobiastes* and *Myzomela*—all from Celebes, collected by Mr. H. C. Raven.

Rothschild on the Birds of Yunnan.

[On a collection of Birds from West-Central and North-Western Yunnan. By Lord Rothschild, F.R.S., Ph.D. Nov. Zool. Tring, xxviii. 1921, pp. 14-67.]

In this paper Lord Rothschild enumerates and describes a collection of 279 species and subspecies of birds collected by Mr. George Forrest in the mountains of Yunnan. Mr. Forrest is a well-known botanical collector, and the birds were a parergon to his main task. Colonel Stephenson Clarke, for whom the collection was made, has most generously presented half the bird-skins, including the types of the new forms, to the British Museum, and the other

half to the Tring Museum. Twenty new species and subspecies are described, but some of these are from other parts of the Indian Region and do not form part of the Forrest collection.

The number of forms now known from Yunnan amounts to 496, out of which 59 are added in the present paper. The character of the avifauna is distinctly Himalayan, but many migrants from the north pass the winter in Yunnan.

Schiøler on Danish Birds.

[Sushkin's Gaas, *Anser neglectus* Sush., truffen i Denmark. Bartram's Klire, *Bartramia longicauda* (Bechst.), ny for Denmark. By E. Lehn Schiøler. Dansk. Orn. For. Tids. xv. 1921, pp. 37-47.]

An example of the rare Goose *Anser neglectus* killed at Ballum, on the west coast of Schleswig, has recently been acquired by Mr. Schiøler, who has a wonderful collection of Palearctic Water-birds. It is the first record for Denmark. Mr. Schiøler in this paper discusses its status and affinities but comes to no very definite conclusions, and until its breeding-place, said to be Nova Zembla, is accurately known it will be difficult to do so.

The Upland Plover (*Bartramia longicauda*) is a well-known North-American bird, and has occasionally reached the British Islands and the continent of Europe. An immature female example was found by Mr. Schiøler among some Snipe in the Copenhagen market. These had been killed at Tim in western Jutland. It is the first record of the occurrence of the Upland Plover in Denmark.

Shufeldt on pictures of the Passenger Pigeon.

[Published figures and plates of the extinct Passenger Pigeon. By Dr. R. W. Shufeldt. Scientific Monthly, 1921, pp. 457-480; 15 figs.]

This paper, which was read at the last meeting of the American Ornithologists' Union in November 1920, contains an account of all the more important published figures of the Passenger Pigeon, from that given by Catesby in his 'Natural History of Carolina, Florida, and

the Bahama Islands,' published in 1771, down to photographs of the last survivor of the species which lived in the Zoological Gardens at Cincinnati, and which is now mounted in the United States Museum, at Washington. Dr. Shufeldt gives the palm to a plate reproduced from a painting by Mr. Fuertes which appeared in Eaton's 'Birds of New York,' published in 1910.

The photographs of the plates were taken by Dr. Shufeldt himself, and form a most interesting series of reproductions.

Stresemann on Sumatran Woodpeckers.

[Die Spechte der Insel Sumatra—Eine monographische Studie. Von Dr. E. Stresemann. Arch. Naturg. vol. 87, Abt. A. pp. 64–120, 1921.]

It is in the Malay Peninsula and Sumatra that we find the greatest development of the Woodpeckers, the former containing 24, the latter 22 different forms, and Dr. Stresemann has accomplished a most useful task in preparing the present monograph based on the material available in Germany, Holland, and at Tring. The nomenclature is carefully worked out, and should be taken note of by all workers on the birds of the Indian Region. *Dinopium* of Rafinesque takes the place of the more familiar *Tiga* of Kaup, and *Blythipicus* for *Lepocestes* of the Catalogue. New forms are:—*Picus vittatus limitans* from Kangean I., near Bali, *Callophus miniatus dayak* from Borneo, *Dinopium javanense palmarum* from Sumatra. There is a carefully constructed key of all the forms treated of, and some interesting general remarks on geographical distribution, variation in size and colour, and sexual dimorphism and moult.

Wollaston's Life of Newton.

[Life of Alfred Newton, Professor of Comparative Anatomy, Cambridge University, 1866–1907. By A. F. R. Wollaston. Pp. xvi + 332; portraits. London (John Murray), 1921. 8vo.]

Newton apparently passed on one of his characteristics to his biographer, for this long looked-for volume has appeared

just fourteen years after his death, but there the resemblance ends, for whereas Newton's works improved by delay the same cannot be said of this book, which the author tells us has had to be cut down by nearly half owing to the present price of printing.

The main object of a "Life" should be to give a clear and impartial account of the chief characteristics of the "Subject," and those of us, who knew Newton, get a good and truthful picture; but a "Life" has also another function, namely, by showing the intimate methods by which a man earned his reputation, others might be spurred on to go and do likewise; on this point, in our opinion, the volume fails, for it lacks continuity in its arrangement and does not lead the reader easily from chapter to chapter, so that we fear that the present generation of ornithologists will rather keep it as an ornament to their bookshelves than assimilate the large amount of valuable information contained in it, and understand the methods which made Newton the foremost and soundest ornithologist of his day.

Mr. Wollaston has the capacity for writing delightful books, but this is not one of them. To read through and epitomize Newton's vast correspondence can have been no easy task, but the result would have made more pleasant reading had the compiler compiled less and written more. The best and most concise description of Newton is found in the chapter by Sir A. E. Shipley, where we have a truly delightful and accurate description of the Professor, but the first half of that chapter, containing merely a dry description of Cambridge in Newton's early days, might well have been omitted when space was an object, or a map, occupying a page, would have been much clearer and more instructive. Another useful cut might have been the omission of the three pages of telegrams to the "Red Lion's Club." There is no evidence that these were the handiwork of Newton himself, and, even if they were, they occupy a space that might have been better utilized.

Another excellent account of the Professor is given towards the end of the book by Dr. F. H. Guillemard,

who relates his first conversation with Newton on his (Guillemard's) return from Lapland. The fact that he had been there for birds was quite enough for Newton, who promptly asked him round on the following Sunday evening. This episode reminds the writer of his first meeting with Newton, when as a "Fresher" he kept some live birds, including Knots, of which Newton had heard. It was about two o'clock in the afternoon, when my landlady announced "Two gentlemen to see you," and in came Newton with his brother. Nearly his first remark was "And, so you're the Knotty man." He looked at one or two wretched bird-skins I had (I shudder to think what he must have thought of them!) and then, with a cheery "Good afternoon," invited me to his Sunday evenings. Such was the man, and such his attitude towards any undergraduate who showed the least genuine appreciation of Natural History.

We are surprised to find no reference to the volume on *Birds of the 'Cambridge Natural History,'* and comparatively little on the Great Bustard, but, with a few minor exceptions, most of Newton's 'pet' subjects have been noticed. The main fault of the whole book lies in the way it has been put together. While the reader's thoughts are on one subject, he suddenly finds himself reading a quotation from a letter on another (the quotations not being in inverted commas or otherwise distinguished from the rest of the letterpress), and it may be necessary to turn over several pages to find the author's or recipient's name in a footnote. This arrangement is exasperating to the average man, and makes it anything but a readable book. For the rest, as might be expected from a compilation of Newton's letters, it contains a considerable array of most interesting facts, which make it worth every ornithologist's while to read in spite of the difficulties which are put in his way; and we hope it may find its place on the book-shelves of every '*Ibis*' in memory of the keenest and most lovable "gentleman attached to the study of ornithology" that England ever produced.—J. L. B.

Aquila.

[*Aquila*: Periodical of Ornithology. Edited by Stephan von Chernel. Vols. xxvi. & xxvii. Budapest, 1920 & 1921.]

The articles in '*Aquila*' are printed in Magyar and German with occasionally a summary in French or English. The first one of vol. xxvi. by the editor, Herr von Chernel, is a plea for a renewal of an international scheme for the protection of birds useful in agriculture. It was prepared for the great Peace Conference in Paris at the end of the war, but apparently nothing came of it. Bird-ringing was continued actively during the war years in Hungary, and J. Schenk has a report on the results for the years 1916-1919. Some 2500 birds were ringed, the greater number being Swallows (701), Great Tits (597), and Storks (241). Two of these latter, ringed in the summer of 1911, were recovered in Egypt in 1912 and in South Africa in 1916 respectively, but all the Tits recovered were taken in the same locality in which they were ringed, as were also the Swallows.

Other articles by J. Schenk deal with migration dates in Hungary for 1919 and 1920 respectively. The food-habits of the Magpie are reported on at great length by E. Csiki, but the results are not presented very clearly, so that it is difficult to say whether the bird should be considered useful or harmful in Hungary. The longest article in the 27th volume is one on the Birds of the Siebenbürgen in Transylvania, based on a manuscript written by Nicolaus v. Zeyk, who lived in the early half of the 19th century.

There are a number of shorter notices all relating to Hungarian ornithology in the two volumes here noticed.

British Birds.

[*British Birds*. An illustrated Magazine devoted chiefly to the Birds in the British List. Vol. xiv. June 1920 to May 1921; 12 nos.]

The last completed volume of '*British Birds*' fully maintains the high standard set up by its predecessors, and is full of matter of interest to students of Palearctic birds.

Perhaps the most striking contribution is that of Mr. Edgar Chance, who again, for the third year in succession, watched through May and June a female Cuckoo which haunted a small gorse-clad common in Worcestershire. He believes that this one individual laid 21 eggs at intervals of about 48 hours each between May 13 and June 27 in the nests of Meadow-Pipits, of which there were nine pairs inhabiting the common. The Pipits built thirty nests altogether, and this it appears was brought about by destroying the nest after the Cuckoo had deposited her egg in it, so as to arrange for fresh nests to be ready for the Cuckoo at a subsequent date. Mr. Chance has described his observations, stated his case, and drawn his conclusions with great clearness. We understand that during the present year he has again been at work, and has taken a series of "moving pictures" which will be shown to the members of the B. O. C. during the coming winter.

Mr. C. B. Ticehurst contributes a series of articles on the history of birds now very rare or extinct in Kent, such as the Kite, Buzzard, Swan, Great Bustard, and Crane; he has obtained a great deal of information from the study of old books and manuscripts. Mr. J. K. Nash writes on the occurrence of the Bee-eater in Midlothian, and how the pair observed were on the point of nesting when the female was captured by a local gardener; and Mr. F. N. Chasen gives an account of the nesting of the Lesser Kestrel in Macedonia.

Among the illustrated articles are a series by Miss E. L. Turner, who has taken her camera to the sand-dunes of Holland and has brought back beautiful examples of her skill, illustrating the Black-tailed Godwit, the Black Tern, the Ruff, and the Avocet; while Mr. T. Lewis contributes notes on the nest of the Little Tern on the coast of Norfolk, illustrated with exquisite photographs of the sitting female being fed by the male.

Mr. Witherby himself discusses the occurrence of the Spotted Eagle and the Steppe Buzzard in the British Isles, and comes to the conclusion that all the records of the

Spotted Eagles which can be identified refer to the larger species, *Aquila clanga*, and that the occurrence of the Steppe Buzzard (*Buteo b. vulpinus*) rests solely on the individual killed in 1864 by Mr. J. Clarke Hawkshaw in Wiltshire, and now in the British Museum collection. In the same article he states that the British Tawny Owl is separable from the continental one by its smaller size and by the more frequent occurrence of the tawny phase. It should be known as *Strix aluco sylvatica* Shaw. Mr. Witherby also contributes two short articles on the progress of the 'British Birds' marking scheme, which is rapidly recovering from the setback caused by the war, and records the fifth example of a Swallow ringed as a young bird in Stirlingshire, 27/vi./19, recovered at Lake Chrissie in the Transvaal, 13/v./20.

The Emu.

[The Emu: Official Organ of the Royal Australian Ornithologists' Union. Vol. xx. July 1920 to April 1921.]

As is the case in Europe, so even in far Australia the great increase in the cost of printing has hampered the activities of scientific societies, and the editors and secretaries of the R. A. O. U. have had a difficult task to keep up the standard of the 'Emu,' though the present volume does not show much diminution in size as compared with previous ones.

The last annual meeting of the Union was held at Perth in October 1920. This is the first time the Union has ever met in Western Australia, and a considerable number of members made the long journey of over 4000 miles from Queensland and other States to attend the session. The January number of the 'Emu' contains a full account of the proceedings, and also a number of papers on the birds of Western Australia, either the result of observations of the visitors, or prepared specially for their edification. Among these there is a workman-like account of the birds of the Swan River district by Mr. W. B. Alexander, and a good article on the birds of Dirk Hartog Island and the Peron Peninsula by Mr. F. L. Whitlock, who was lucky enough to

be there during the breeding-season, and thus found the eggs and nests of many of the local forms which Mr. Thomas Carter was unable to obtain.

The Report of the Check-list Committee engaged in drawing up a new Check-list of Australian birds was also considered, and we are glad to observe that the List will probably be quite complete in time for the next annual gathering.

Among the very many communications printed in the present volume, we should like to specially mention one by Mr. R. Stuart-Sutherland, in which he reviews the Penguins, with special reference to the Australian species, and another by Mr. W. B. Alexander, who reviews the Australian species of Tubinares—both useful pieces of work. Mr. A. J. Campbell has prepared some notes on a collection of birds from the islands in the Torres Straits, formed by Mr. W. R. M'Lennan for the H. L. White Collection, which is now at Melbourne in the National Museum. The plumage changes of the Nankeen Night-Heron (*Nycticorax caldonicus*) have been carefully recorded by Mr. C. F. Cole and are illustrated by a good coloured plate; and Mr. R. Hays has written an account of the food-pellets of Kingfishers, one of the most interesting consisting of the round calcareous concretions ("crabs' eyes") found in the stomach walls of freshwater Crayfishes, which appear to form a considerable part of the diet of the Laughing Kingfisher (*Dacelo gigas*).

A new feature of the 'Emu' are the Reports from the State Secretaries, giving accounts of what is going on in each individual State of the great Island Continent, and which undoubtedly must assist in bringing the scattered ornithologists in closer touch with one another.

We notice only two new forms described—*Ptilotis geraldtonensis* Ashby, from Geraldton in Western Australia, and *Menura superba edwardi* Chisholm, from Stanthorpe in southern Queensland near the New South Wales border. This new Lyre-bird differs markedly from the other forms in its habits, as it lives in comparatively open country and the nests are placed in the clefts of giant granite boulders.

It is named after the Prince of Wales, who had just previously passed through the country it inhabits during his recent memorable journey to Australia.

El Hornero.

[El Hornero. Revista de la Sociedad Ornitológica del Plata. Vol. ii. for 1920; 2 nos.]

The second volume of 'El Hornero,' completed in two numbers, contains a good deal of information relating to the birds of the Argentine and other neighbouring States and maintains the promise of the first. Señ. J. Tremoleras contributes a list of the birds of Uruguay based on 30 years' observation. The last general list was that of Mr. O. V. Aplin, published in 'The Ibis' for 1894, and we are glad to see Señ. Tremoleras quotes him and gives him all the credit due to him. Mr. A. G. Bennett, of Port Stanley, Falkland Islands, sends good notes and photographs on birds observed by him in the South Shetlands and South Orkneys. This article, though originally written in English, is translated into Spanish for the pages of 'El Hornero.' Some account of the nesting habits and the young birds of the Maguari Stork, also accompanied by photographs, is given by Señ. M. Fernandez, of La Plata. Those curious external insect parasites which prey on Birds and some Mammals, and which form the group Mallophaga, have been a good deal studied of late years. Señ. F. Lahille has collected and published a list of all those which are found on Argentine birds. They perhaps should not be regarded as parasitic, but rather as epizotic, as they do not appear to injure their host in any way, but feed on the epidermal products, such as the feathers and hairs. Little attention has been paid to the birds of the "chaco" region of north-western Argentina, since Prof. Graham Ker visited it in 1890-1, and we are glad to see in the present volume a long article on the birds of this region by Señor E. L. Arribalzaga. Finally, we must mention Dr. R. Dabbene's own contributions to the volume. He has completed an account of the Argentine Penguins with descriptive keys, ranges and distribution, and outline figures to illustrate the differences of the seven

species inhabiting the Argentine coast. Another study is devoted to the Rheas, of which he recognizes three separable forms. A third paper deals with the North American Wading birds, 24 species of which winter in the southern part of South America; in this case there is a careful list of all the published and many unpublished detailed records. We notice only one new form described. This is *Lepasthenura egithaloides pallida* Dabbene, from Patagonia.

Both the numbers contain a good many shorter notes, personal paragraphs, and even poems.

South Australian Ornithologist.

[The South Australian Ornithologist. A Magazine of Ornithology. Vols. iv. & v. for 1919 and 1920; 4 nos. in each year.]

This little magazine, published by the South Australian Ornithological Association and edited by a small committee of its members, continues to reach us regularly, and the last two volumes contain a number of papers almost entirely concerned with observations on South Australian birds. Each number includes an account of the monthly meetings of the Association, and the description with biological details of a single member of the South Australian Avifauna.

Capt. S. A. White has concluded the memoir of his father, Samuel White, one of the pioneers of Australian ornithology and the friend and correspondent of Gould. Mr. A. M. Morgan, Mr. E. Ashby, Mr. J. W. Mellor, Mr. J. N. McGilp, write pleasant articles on their ornithological rambles in various parts of the State. Some controversial letters on nomenclature by Mr. A. J. Campbell and Capt. S. A. White enliven the pages of some of the numbers of the magazine, and in the January 1920 number Mr. Mathews intervened with an essay on "Zoological Nomenclature: its History and Reason," which at once drew a spirited reply from Mr. Campbell.

We notice descriptions of the following new races:—*Climacteris erythrops parsoni* Mellor, from the Murray river valley; *Stipiturus malachurus halmaturina* Parsons, from Kangaroo Island,

Tori.

[Tori. The Aves. Bulletin of the Ornithological Society of Japan, vol. ii. nos. 9 & 10. April & Dec. 1920.]

With these two numbers is completed the second volume of our Japanese contemporary. We are glad to see that in the last number, not only are the title-page and contents given in English, but the list of officers of the Society and the exact date of publication of the various numbers of the journal. In No. 9 will be found descriptions of a new Flower-pecker from Formosa by Mr. Kuroda, named *Dicaeum minullum uchidai* after the President of the Society. Mr. Kuroda also discusses the sexual distinctions of the lately described *Pseudotadorna cristata*. Mr. T. Momiyama describes *Aplonis kittlitzii kurodai*, subsp. n., from Yap in the western Caroline Islands, and Mr. T. Mori writes on the birds of Quelpart Island off Corea. The last number contains a List of the birds of the Dagelet Is., Corea, by Messrs. Kuroda and Mori; Ornithological notes from the neighbourhood of Sasanami, Prov. Nagato, by Y. Kanetsune; On breeding-seasons of some birds in Prefecture Mizagi, by S. Kumagai; and Notes on breeding-habits of *Ninox s. scutellata* (Raffl.), by Messrs. Kawaguchi and Ikemura. An artistic coloured plate illustrates the subspecies of the Varied Titmouse, *Parus varius*.

List of other Ornithological Publications received.

FLETCHER, T. B., & INGLIS, C. M. Some common Indian Birds. Nos. 8 & 9. (Agr. Journ. India, xvi.)

LINCOLN, F. C. Instructions for Bird Banding. (U.S. Dept. Agr., Circular 170.)

WITHERBY, H. F. A Practical Handbook of British Birds. (Pt. xi.)

Austral Avian Record. (Vol. iv. no. 6.)

Avicultural Magazine. (Vol. xii. nos. 6-8.)

Bird-Lore. (Vol. xxiii. nos. 3-4.)

Bird Notes. (Vol. iv. nos. 5-7.)

British Birds. (Vol. xv. nos. 1-3.)

Brooklyn Museum Quarterly. (1921, nos. 1-3.)

Canadian Field Naturalist. (Vol. xxxv. nos. 1-3.)

Condor. (Vol. xxxiii. nos. 3-4.)

- Fauna och Flora. (1921, no. 3.)
 Gerfaut. (XI^e Année, no. 2.)
 Irish Naturalist. (Vol. xxx. nos. 6-8.)
 Journal für Ornithologie. (Vol. 69, no. 3.)
 Journal of the Bombay Nat. Hist. Soc. (Vol. xxvii. no. 3.)
 Journal of the Nat. Hist. Soc. Siam. (Vol. iv. no. 2.)
 L'Oiseau. (Vol. ii. nos. 5-7.)
 Oologists' Record. (Vol. i. no. 2.)
 Ornithologische Monatsberichte. (Vol. 28, nos. 7-8.)
 Revue Française d'Ornithologie. (Nos. 146-149.)
 Scottish Naturalist. (Nos. 113, 116.)
 Tori. (Vol. iii. no. 11.)
 Transactions of the London Nat. Hist. Soc. (Vol. for 1920.)
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XL.—*Letters, Extracts, and Notes.*

Bird-migration and the Marking Method.

SIR,—As one of the largest individual ringers of birds in this country, I read Professor Thomson's article on "Bird-migration by the Marking Method" with great interest. In the literature of the subject, however, I was astonished to find no mention of the marking experiments conducted by the late Professor J. A. Palmén, of Helsingfors University, in Finland, or by the Russians at Kielkond, on the island of Oösal, under Herr Stoll. I have found ringed birds in this country marked by both of these gentlemen. Professor Palmén's experiments show some wonderful results, Black-headed Gulls (*Larus ridibundus*), for instance, showing two distinct lines of migration, the one down the Baltic and the other overland across Europe *via* Austria to the Mediterranean. His ringing of other species, many of them within the Arctic Circle, also showed long journeys. Large numbers of each species must be marked before any conclusions can be arrived at, yet Professor Thomson also fails to mention my article in 'British Birds,' vol. viii. p. 209, on the result of marking nearly twelve thousand Black-headed Gulls (*Larus ridibundus*) in this country. To Professor Thomson's query: "Do young birds seek the same winter quarters as their parents?" the answer is that they

do, as shown by more than one species, especially Lesser Black-backed Gulls (*Larus fuscus affinis*), bred in this country, of which quite an encouraging percentage has been recovered.

Neither is any mention made of Palmén's ducks marked in the far north, which show some wonderful results, two Teal, for instance, being recovered in Spain and Italy respectively. His Starling records are also intensely interesting, showing, as they do, several recoveries in this country. In the article three records only are given of Swallows marked with 'British Birds' rings being recovered in South Africa, whereas the number should be five. Again, no mention is made of the wonderful record of a Wigeon marked with a 'British Birds' ring in England and recovered in Asia. With regard to the supposed sedentary habits of the British Redbreast, I can quote at least two instances of such marked birds being recovered abroad.

Finally, it would be interesting to learn the total number of birds marked by the American Bird Banding Association. I might conclude by saying that Mr. F. W. Smalley and myself once marked 720 birds of one species in the course of one day.

II. W. ROBINSON.

* The Patchetts,
Caton, near Lancaster,
1 August, 1921.

Birds of Alderney.

SIR,—I notice that in Major W. R. Thompson's interesting paper in the July number of 'The Ibis' on the Birds of Alderney, he assigns the Goldfinch, Bullfinch, Tree-Creeper, Great Tit, Blue Tit, Song-Thrush, Robin, and Dipper to the British forms without comment. Referring to Mr. Witherby's 'Practical Handbook,' I find that all these are said to be confined to the British Islands except the Song-Thrush and Robin. I do not know whether birds of all these species from north-west France have been compared with the British forms, or whether Channel Island birds have been compared with either French or British;

but, from the position of the Channel Islands, one would suppose that resident birds there would conform more closely to the birds of the adjoining French coast than to those of the far more distant coasts of England. In any case, unless the results of comparisons made have already been published somewhere, I think it can be hardly safe to assume that the breeding birds of the Channel Islands are all of the British form. I do not think birds pay much respect to political geography.

Yours truly,

H. G. ALEXANDER.

78 Gibbins Road,
Selby Oak, Birmingham,
20 July, 1921.

Subspecies and Evolution.

SIR,—Without any claim to the “highly trained scientific mind” postulated for the critic of Colonel Meinertzhagen’s paper: “Some Thoughts on Subspecies and Evolution” in the last number of ‘The Ibis,’ one or two points may be raised.

The first is his use of the term Mutation. It is not clear whether it is used in the sense of De Vries, or whether it is applied (as some modern writers have applied it) to certain characters transmitted in accordance with Mendel’s Law. On p. 533, lines 27 and 28, it seems to refer simply to monstrosities or deformities. There is also apparent confusion between Mendel’s discoveries and the Germ-plasm Theory of Weismann, though the latter is only mentioned by name once (p. 535), and then in a passage which suggests a printer’s error.

A second point is, that it is not established that when domesticated forms return to feral life, they always revert indistinguishably to their ancestral type. This has not taken place in the case of the Porto Santo Rabbit described by Haeckel (‘History of Creation,’ English translation, vol. i.).

Thus the following (p. 532) is misleading :

“The mutationist will argue that whenever a domesticated variety resumes a wild life, the original wild stock being dominant to the recessive domesticated variety, such

variety must revert, and that such a process is in strict accord with Mendel's theory."

The word "recessive" implies that "dominant" is used not in its general, but in its technical Mendelian sense. We suppose that "mutationist" means here a student of Mendel's principles of heredity, and such a one might be surprised at the views imputed to him.

The appearance of certain characters in the Mendelian ratio is not a theory, but a law demonstrated by experiment, and the "Mendelian Law" simply means that such characters will appear in definite proportions in each generation.

If we suppose that characters which appeared under domestication are recessive, when the domesticated forms interbreed with the wild stock, even if the recessives are so strictly weeded out by natural selection that they never survive to breed, still a certain number of recessives will infallibly appear whenever two heterozygotes interbreed. This, and not necessarily Colonel Meinertzhagen's assumption, is what is in strict accordance with Mendel's Law. Cases in nature are probably never so simple as this hypothetical one. For instance, recent work on Lepidoptera suggests that in certain cases the recessives are better able to survive than the dominants.

From the last paragraph on p. 530, and the second paragraph on p. 532, we are led to believe that Colonel Meinertzhagen considers breeding experiments to be of little use in the study of evolution. Yet on p. 535 he notices with approval Kammerer's well-known experiments on Amphibia, from which "it would appear that acquired characters are indeed heritable." Modern biologists, while acknowledging the interest and significance of Kammerer's results, would perhaps hardly commit themselves yet to such a final assertion on the Homeric Question in biology.

Further, there is every reason to believe that Mendel's Law holds for animals in a natural state. Take, for example, Lang's experiments on *Helix nemoralis* described by Darbishire (Journ. of Conchology, 1905). Some remarks by the latter (Introduction to a Biology, 1917, pp. 217-219) on the normal and abnormal in inheritance also answer

some of Colonel Meinertzhagen's contentions about artificial breeding and "freakish" varieties.

As regards the statement on p. 532, it may be true of domesticated birds that "no single artificial variety has ever, so far as we know, occurred in a wild state," but this is not the case for numerous species of plants, nor for other groups of animals. See, for instance, Tower's observations on *Leptinotarsa* (Pub. Carnegie Inst. Washington, 1906). Tower's work has been criticised on the ground that it is not certain that the strains he employed were pure—*i. e.* genotypes; but this does not affect the value of his observations as an argument against Colonel Meinertzhagen's assertion, quoted above.

I repeat that I have no desire to criticise Colonel Meinertzhagen's views on subspecies, one way or the other. They may, or may not, be correct, but I take some exception to his manner of stating them, and still more to his method of founding conclusions on generalisations that are not always supported by facts.

There are three methods by which, singly or in combination, a scientific problem may be approached—induction, observation, and experiment; and, ultimately, it is only by experiment that a theory can be tested. Birds are a group which at present do not lend themselves to experiment, except in certain restricted instances; but because our experimental methods are inadequate, it is surely unreasonable to argue that all experimental work is unreliable, or that the facts themselves do not exist.

I am unable to offer an opinion on the origin of species, owing to insufficient knowledge of the biological evidence necessary to form one; but I am convinced that it will be only by experiment that any of the different theories advanced will be raised from the quicksand of a hypothesis to the firm ground of demonstrated fact.

MAUD D. HAVILAND, H.M.B.O.U.

Research Fellow in Zoology.

Newnham College,
Cambridge,

16 August, 1921.

Nestling Plumages of Owls.

SIR,—Mr. Witherby's letter *re* the above ('Ibis,' p. 567) has caused me to go into the matter again.

Mr. Witherby writes: "I cannot agree with Mr. Bonhote that the Eagle-Owl has three generations of plumage before acquiring feathers like those of the adult. . . . I find . . . that the first down is immediately succeeded by the juvenile plumage. . . . The specimens in the British Museum clearly show the shortish white down attached to the tips of these downy feathers."

I have examined these same specimens in the Museum, and find that "downy feathers" of the juvenile plumage and the down of the second plumage *both* carry the shortish white down at their tips.

The second down plumage has also been noted by two other observers—(1) Mr. Gurney, 'Zoologist,' 1849, p. 2567; (2) M. Lavauden, 'Revue Française d'Ornithologie,' May 1920, p. 60.

The first point to be considered is the chronological sequence and age at which these plumages show. Mr. Gurney's notes and mine exactly coincide. Mr. Gurney writes that the young were hatched on 19 May and covered with a whitish down; at three weeks old they assume a second down, and the first feathers (? quills, J. L. B.) began to appear at five weeks; on 23 July they could fly to the perches.

My birds were hatched on 25 May; on 21 June (three weeks and five days) they were covered with a buffish down; on 3 July (five weeks) the quills were just showing; on 8 August they could fly, and they were in adult dress by 6 September.

There can therefore be no doubt whatever that the Eagle-Owl has three distinct plumages before assuming its first winter plumage. The point, then, is how can these plumages be morphologically interpreted, in view of the fact that, as Mr. Witherby points out and in which I concur, the juvenile (third) plumage bears the first white down on its tips, as does also the second down plumage.

Adult birds are clothed with down and feathers, the latter usually concealing the former. Morphologically, the first generation of down or feathers is known as neossoptiles, and the second and subsequent generations as teleoptiles. In many species the neossoptiles are entirely suppressed. Some writers distinguish between the neossoptiles that precede the down and those that precede the feathers, calling the former preplumulae and the latter prepennae. In some species the neossoptiles are entirely preplumulae, in others entirely prepennae, whilst in many species they are both prepennae and preplumulae.

Newton, while noting that adult birds are clothed with down and feathers, regards them as morphologically identical, but the down representing a more primitive type of feather (Newton, *Dict. of Birds*, p. 242). Without going into this matter in detail, what happens in the case of the Eagle-Owl is now pretty clear. The first white down represents the neossoptiles; my second and third plumages form together the first generation of the teleoptiles; but since they do not appear simultaneously at first, we have an apparent second plumage consisting solely of the first teleoptile down, and an apparent third plumage, which corresponds with the "juvenile" plumage, consisting of the first teleoptile feathers.

The Barn-Owl seems to offer a slightly different problem. When hatched it is covered with a short white down, which is succeeded by a long white down followed by true feathers. It differs from the Eagle-Owl in the fact that the first true feathers are the second generation of teleoptiles and bear the long second down at their tips. It follows, therefore, that the long second down of the Barn-Owls corresponds to the first teleoptile or juvenile plumage, but in the Barn-Owls it is entirely downy, whereas in the Eagle-Owl it is a "downy feather." It is probable, however, that in the Barn-Owl, as in the Eagle-Owl, the first teleoptile down precedes the first teleoptile "feathers," but that in the Barn-Owl they are indistinguishable. While on this subject I have had occasion to look at Sparrow-Hawks, having some downy

young at hand, and find that their plumages are exactly analogous to those of the Eagle-Owl; at a certain age they are covered with a long second down, bearing the short first down at the tip, to be covered over in a few weeks or so by the "juvenile" feather plumage, also bearing the short first down at the tip.

In the Game Birds we have three definite plumages before the first winter plumage—the first being a down plumage and the others true feathers; and it is perhaps interesting to note that among a small percentage of males in domestic poultry the second plumage, with the exception of the flights, is entirely suppressed.

The question of these plumages, which is of considerable interest, needs much careful further study.

J. LEWIS BONHOTE.

Park Hill House, Carshalton,

25 July, 1921.

The Ornithological Society of France.

We welcome the announcement in the July number of the 'Revue Française d'Ornithologie' of the formation and first meeting of the "Société Ornithologique de France," which was held on 29 May last in the Zoological Theatre of the Museum in Paris. M. Menegaux presided, and the following officers were elected:—Hon. Presidents, MM. Bureau and Simon; President, M. A. Menegaux; Vice-Presidents, Dr. Arnault and M. Lavauden; Secretary, M. J. Rapine; and Treasurer, M. Villette de Pingues.

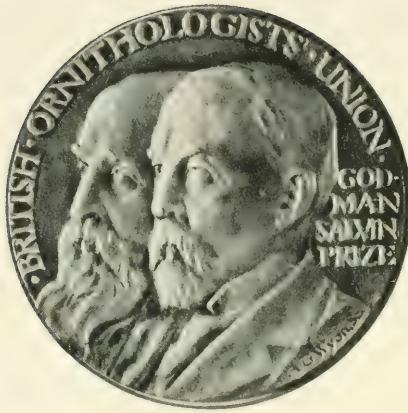
The Oxford University Expedition to Spitsbergen, 1921.

We are glad to announce that the members of the first party of the Oxford Expedition have now returned safely to England. Some alterations in the original plans had to be made, owing to difficulties of transport during a period of strikes both in England and Norway. From 13 June to 23 June a biological survey of the southern part of Bear Island was carried out by a party of seven under the

direction of the Rev. F. R. C. Jourdain. Here a collection of about 80 skins was made and some 300 eggs were collected, while two new breeding species were recorded for the first time from the island. On 23 June the Expedition sailed for Spitsbergen, and the shores of Ice Fjord, as well as the west and north coast east to Liefre Bay, were explored and further collections made. Mr. J. S. Huxley was in charge of a party encamped on Prince Charles Foreland from 30 June to 11 July, when they rejoined the sloop, which served as base for the rest of the trip. The results have proved most interesting from an ornithological point of view, and also as regards marine zoology, botany, and geology. Altogether about 300 skins have been brought home, including a large proportion of young in down of many species and specimens of all three breeding Geese in their flightless condition. The egg collection consists of about 500 specimens, including no fewer than 22 eggs of the Barnacle-Goose (*Branta leucopsis*). The only authentic eggs of this species taken under natural conditions were the 12 obtained by Professor Koenig's two expeditions in 1907 and 1908. Much valuable information as to the breeding-ranges of the birds of the group was also obtained, and in some cases the courtship habits and life-history have been closely studied. The last paper published in 'The Ibis' on the ornithology of Spitsbergen was in 1897, and only 29 species were then recorded from all sources. At the present time 38 species are known to have occurred on Bear Island alone, while at least 53 must be included in the list from Spitsbergen proper.

News of Capt. Lynes.

Capt. Lynes's last letter is addressed to Dr. Percy Lowe and is dated 3 June, from Talingei, Lat. $12\frac{1}{2}$ N., Long. $25\frac{1}{2}$ E. January to April was spent in the Jebel Marra at 4000-9500 feet, where the peaks and plateau and "downs" were thoroughly explored, and many temperate plants such as bracken, heaths, etc., etc., were obtained. During the rainy season fresh quarters were found on the Wadi Ariba, an



The Godman-Salvin Medal—obverse and reverse.

affluent of Lake Chad, at about 4500 feet. Here native straw huts have been constructed for the party, and the surrounding country is varied and likely to prove a rich collecting-ground. The rains are heavy and last about four months. Both Capt. Lynes and Mr. Willoughby Lowe appear to be in good health and spirits, and the collections, both of bird-skins and in other branches of Natural History, are accumulating rapidly.

The Godman-Salvin Medal. (Pl. IX.)

It will be remembered that at the Annual Meeting of the B. O. U. in March 1919 it was unanimously resolved that the Union should found a medal to be called the Godman-Salvin Medal, which should be given from time to time for distinguished ornithological work, and that subscriptions for this purpose should be raised among Members of the Union.

A sum of £163 has since been collected, and a list of those who subscribed will be found on p. 787 of 'The Ibis' for 1919.

The design was prepared by Mr. Allan G. Wyon and a die has been cut, and as soon as a suitable occasion presents itself an award can be made. On Pl. IX. will be found a photographic representation of the obverse and reverse of the medal. The total cost of the design and the cutting of the die amounts to £105; postage, stationery, etc., etc., £5; leaving a balance of £53 to defray the cost of striking the medal when it is required.

The Plumage Act.

From the 'Times' we learn that the Advisory Committee provided for by the Importation of Plumage (Prohibition) Act will be constituted as follows:—

Lord Crewe (Chairman); Mr. E. C. Stuart Baker and Dr. W. Eagle Clarke (experts in Ornithology); Mr. C. F. Downham, Mr. W. G. Dunstall, and Mr. L. Joseph (experts in the feather trade); Lord Buxton, Capt. E. G. Fairholme, Mrs. Reginald McKenna, and Mr. H. J. Massingham.

Notice to Members of the B. O. C.

A Special Meeting of the British Ornithologists' Club will be held at the Meeting-room of the Zoological Society in Regent's Park, on Wednesday, 9 November, at 5.30 P.M., when Mr. E. P. Chance will show a cinematograph film illustrating the life-history of the Cuckoo. The film, which was taken under the direct superintendence of Mr. Chance, illustrates many details of the habits of the Cuckoo hitherto unrecognized. Members of the Union who are not members of the Club are cordially invited.

. Russian Ornithologists.

From the last number of the 'Journal für Ornithologie' received (p. 463), we learn on the authority of Dr. Reichenow that Dr. V. Bianchi, Hon.M.B.O.U. died on 10 January, 1920, and Mr. S. N. Alpheraky in 1918. Mr. S. A. Buturlin is living at Alotyri in East Russia, Prof. Menzbier in Moscow, and Dr. Suschkin has succeeded to the post in the Petrograd Museum formerly held by Dr. Bianchi.

The late Lieut. G. Wyman Bury.

Mrs. Bury writes in regard to the obituary notice of her late husband, Lieut. Bury, which appeared in the January number of 'The Ibis' (p. 151), that her husband was not *attached* to the Percival-Dodson expedition in 1899-1900 as stated in the notice, but he established their camp at Abyan and then returned to Aden; when he heard of the serious illness of Mr. Dodson, which subsequently resulted in his death, he obtained leave to return to Abyan and brought the expedition safely back to Aden.

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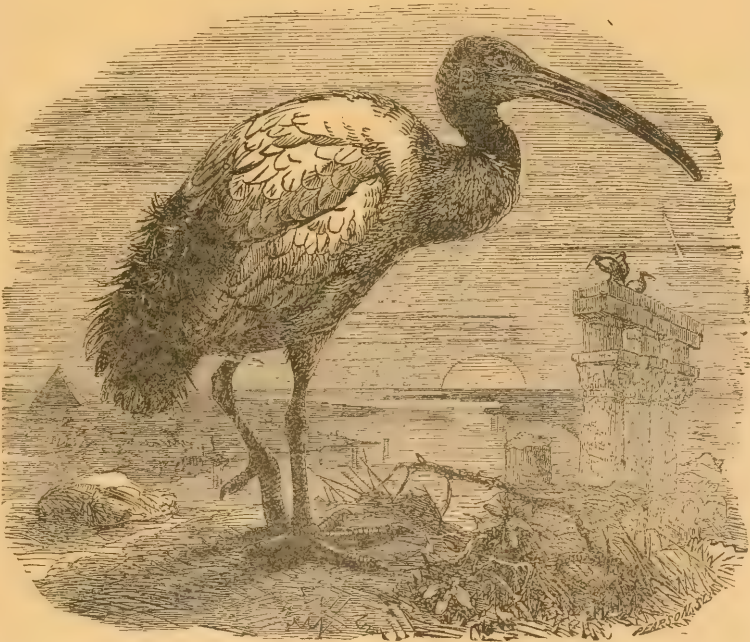
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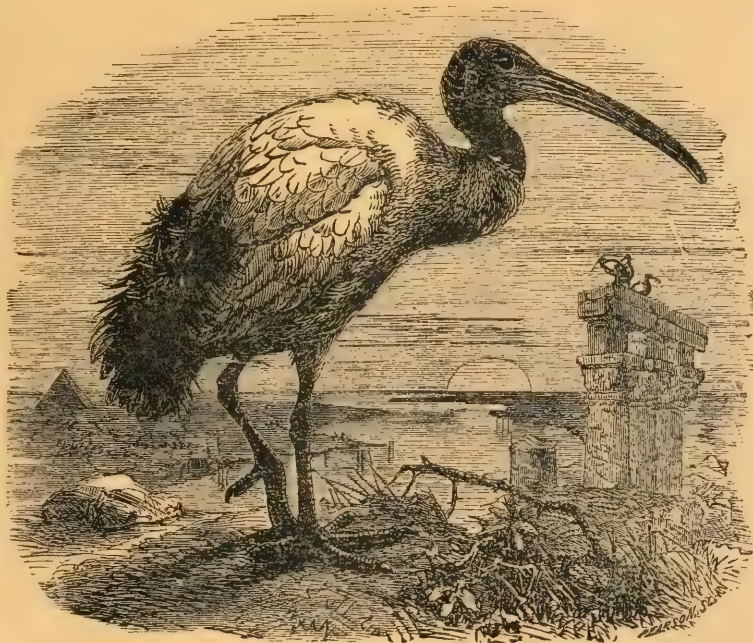
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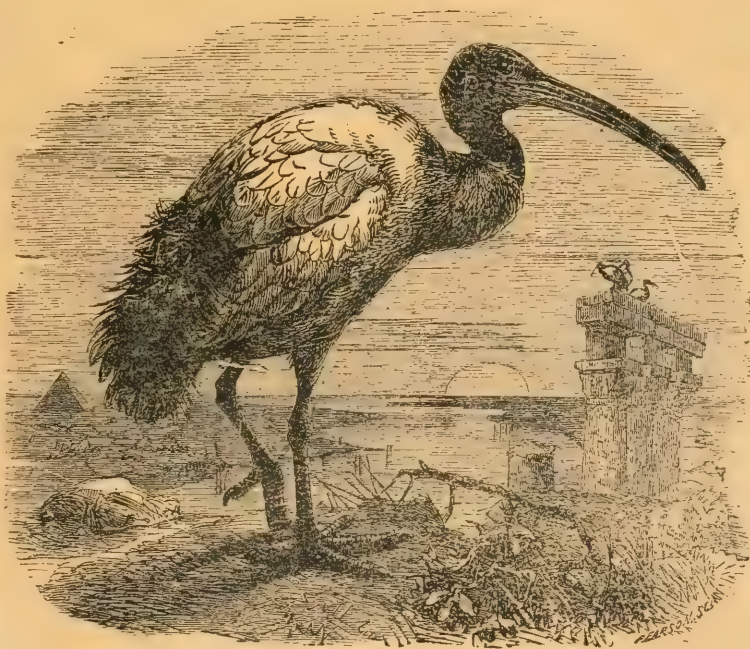
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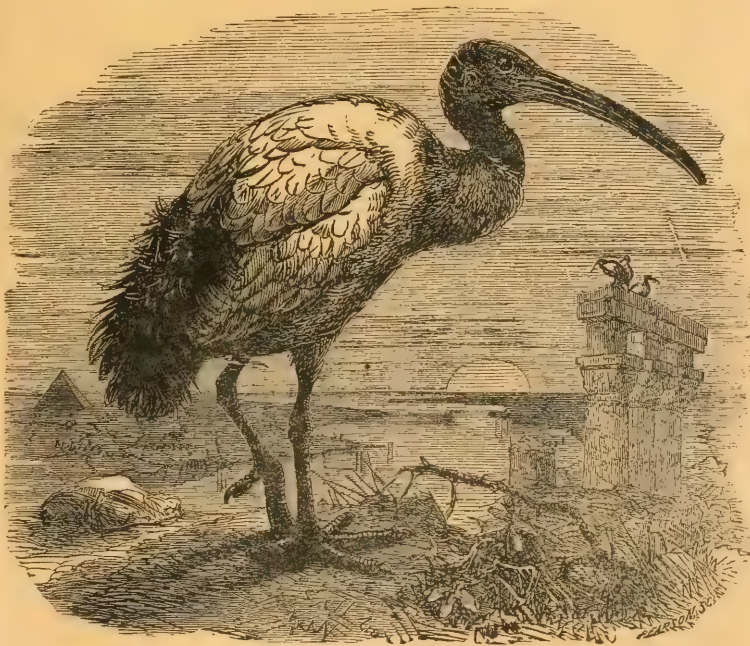
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